

- PN-AAZ-453 -

REDSO/ESA: The MADAGASCAR Program

CDSS Update (1986-1990)

Submitted to AID/W from  
REDSO/ESA: 3/14/86

# TABLE OF CONTENTS

	<u>Page</u>
I. <u>SUMMARY</u>	1
II. <u>ANALYSIS</u>	3
A. Introduction:	3
B. Madagascar's Policy Reform:	7
1. Stabilization Policy	7
2. Structural Reform	8
a. Industrial Policy	8
b. Import administration	8
c. Export promotion policies	8
d. Transport sector policies	9
e. The investment climate	9
f. Privatization of equity and management	9
g. Agriculture policy reform	10
III. <u>STRATEGY</u>	12
A. Continuing Policy Dialogue	13
B. Food Interventions	15
C. Agriculture Production Response	16
D. Private Sector Involvement	18
E. Population and Family Health	21
F. Uses of Counterpart Currencies	24
Summary of Strategy	27
IV. <u>RESOURCE REQUIREMENTS</u>	28
TABLE 1: Madagascar: Projected AID Funding Levels: FY 1986-1990	30

## I. SUMMARY

A.I.D.'s strategy for Madagascar for the period 1986-1990 is now almost two years old (May, 1984). This document aims to review this strategy in view of two new considerations:

- (a) Madagascar's recent experience with its economic liberalization program, which is now effectively two years old;
- (b) A.I.D.'s exposure to Madagascar since the opening of a resident office in September 1984, the first in twelve years.

The United States national interest, the key determinant of any U.S. economic assistance program, has not changed for Madagascar since the preparation of the parent strategy document, and hence does not form an explicit part of this discussion.

The question of what revisions in U.S. economic assistance to Madagascar are called for in the FY 1986-1990 planning period is made acute by a further new development: The imposition of severe budget limitations to reduce the Federal budget deficit. As it is therefore unlikely that U.S. assistance, including staffing, to Madagascar will be significantly increased, the efficacy of available aid becomes more critical.

Economic reform efforts in Madagascar are real and continuing. This is our central finding stemming from direct experience in Madagascar over the past two years. Although these reforms have not yet yielded significant results and despite the Government's sensitivity on this score, President Ratsiraka and his advisors have made a commitment to continue with liberalization of the economy, in major part because they have no real alternative. Even with the powerful support of the IMF, World Bank, and other donors, the reform process has been uneven, with excellent results in some areas (e.g., economic stabilization) and barely discernible movement in others (e.g., export promotion, the transport sector). Nevertheless, economic reform is alive; and in the crucial area of the pricing and marketing of rice, the government has agreed after much hesitation to complete liberalization.

While our long-term aim is to help Madagascar achieve and maintain food self-reliance, our immediate objective in the planning period (1986-1990) should be to ensure the success of the agriculture policy reform measures now underway.

particularly those of rice pricing and marketing. To reach this objective, and to help Madagascar begin now to deal with the population question which is essential to food self-reliance, A.I.D. will undertake five sets of actions:

- Continuing policy dialogue: This will entail the contract services of a leading U.S. economic analyst, observation/study tours in association with an annual in-country agriculture policy workshop, and help with data collection and analysis. We will consider use of funds from the African Economic Policy Reform Program (AEP RP).
- Food intervention: Under a multi-year Food for Progress program, using some alternative mechanism, A.I.D. will support the implementation of agricultural policy reforms by providing food assistance to curtail excessive price surges which occur under conditions of scarcity.
- Agriculture Production Response: Especially in the rice sub-sector, this assistance will help small farmers with improved varieties and other technology, with infrastructure rehabilitation, and with soil conservation measures to take advantage of the higher incentive prices now available under Madagascar's liberalization program.
- Private Sector Involvement, including Commodity Imports: To assure more efficient support to the small farmer, as well as the improved processing and export of agriculture products, A.I.D. will fund studies, extend counterpart fund credit and provide commodities which will permit the larger play of private sector forces in agriculture-based production enterprises.
- Population and Family Health: Food self-reliance is what we seek for Madagascar. However, a proper food/population balance requires that the Government develop and implement a family planning policy. A.I.D. is extremely well placed to assist this essential effort, which must begin now if it is to help Madagascar maintain food self-reliance in the next century.

Regular bilateral aid flows are projected to continue at roughly current levels (\$15-20 million per year). This total does not include, however, AID/Washington funds which will be allocated for certain aspects of the program (e.g., population), nor does it count supplemental funds which may be forthcoming under Food for Progress or from the African

Economic Policy Reform Program (AEPRP) in support of Madagascar's liberalization effort.\*

A small resident office consisting of two U.S. Direct Hire Officers (USDH) and three locally employed professional officers will manage this program in the 1986-1990 period, with assistance from REDSO/ESA in Nairobi. We propose, however, that AID/W conduct a management review together with REDSO in mid-FY 1987 to decide whether the number of resident USDH staff in Madagascar is adequate in view of other demands upon REDSO staff resources elsewhere in the region. This review should also decide the appropriateness of continued REDSO direction of the Madagascar program.

## II. ANALYSIS

### II.A. Introduction:

If a full-scale CDSS team were to visit Madagascar in 1986, it would describe the overall economic situation and conditions in the three key investment sectors (agriculture, transport, and industry) in very much the same terms as did the FY 83-84 CDSS mission. The general picture has not greatly changed: Madagascar's debt burden is still the government's most worrisome problem (after rescheduling, 50 per cent of export earnings go to pay interest and principal); the resulting lack of foreign exchange is seen to be the prime constraint on production; in an overwhelmingly agricultural economy, rice is still king (70 per cent of Malagasy are engaged in rice cultivation); and soil erosion and deforestation -- environmental exhaustion -- has reached alarming proportions.

A.I.D. today, however, knows much more about Madagascar than it did two years ago. Preparations for the second Madagascar Consultative Group (November, 1984) yielded a bountiful crop of macro-economic and sector analysis although at the time of drafting this CDSS Up-date, Host Country and IBRD offerings for the third Consultative Group, scheduled for April 1986, were still unavailable. Other donor documents and secondary published sources, appearing more frequently now, have been helpful. Chiefly, though, A.I.D.'s growing understanding of Madagascar is the result of day-to-day operations since we established a permanent presence there in September, 1984. In addition, special studies made or directed by REDSO staff over the past twenty months have been instructive. These studies include, in chronological order:

\* U.S. economic assistance to Madagascar accounts for about six per cent of total ODA. This Up-date does not include a section on other donor programs, since at the time of preparation, no official statistics on donor flows, verified by the donors themselves, were available.

- REDSO's energy/natural resource pre-assessment in July-August, 1984;
- University of Wisconsin's overview of land tenure information, (L. Colvin Phillips) in December, 1984;
- BUCEN's assessment of institutional capability in statistics (D. Clay and M. K. Friday) in February, 1985;
- USDA's study of data analysis capability in the agriculture sector (S. Tun and T. Zalla) in March, 1985;
- ISTI'S private sector climate assessment (P. Glenshaw and D. Harmon) in April, 1985;
- REDSO's population and family health assessment (D. Ferguson-Bisson and J. Lecomte) in May, 1985;
- CLUSA's brief review of cooperatives (J. Alrutz) in June, 1985;
- INTSOY's survey of soybean potential (H. Kauffman and W. Root) in September, 1985;
- Winrock's study of farm systems research (D. Norman and D. Nygaard) in November, 1985;
- Equator Advisory Service's proposal for a private sector investment fund (B. Bouchard and T. Detrie) in December, 1985;
- Elliot Berg Associates' review of Madagascar's economic policy reform (E. Berg) in January, 1986.

To these studies should be added three summary pieces by REDSO/ESA specialists which are appended to this CDSS up-date:

Economic Analysis, by Hadley E. Smith, January, 1986;

Energy/Natural Resource Sub-Sector, by James R. Seyler, C. Anthony Pryor, John Gaudet, and Carolyn Barnes, February, 1986;

Social Analysis, by Carolyn Barnes, January, 1986.

Special events and particular tasks carried out in the course of program implementation have also been highly instructive. To mention just four, out of many other examples:

- REDSO's mid-term evaluation of the IRRI rice research program, November, 1985;

- The University of Pittsburgh's two week in-country project management workshop, for representatives from ten ministries, August, 1985;
- Energy Initiatives for Africa's (EIA) and REDSO's hydro-power pilot project at Ampefy, beginning April, 1985;
- The organization of the commodity import component of A.I.D.'s bilateral project with Madagascar (Agriculture Rehabilitation and Support, 687-0101, \$5.0 million).

While this study and experience has deepened A.I.D.'s appreciation of Madagascar's requirements and various efforts to meet them, the past two years have not altered A.I.D.'s reading of the basic problems:

- Economic growth, while no longer stagnant, is at best sluggish:

Both GDP and agricultural output rose only an estimated 1.8 per cent in 1985, a full percentage point below population growth. Export earnings have failed to increase significantly during the last five years. With an extremely heavy debt service burden -- over 100 percent of foreign exchange earnings from merchandise exports in 1985, before rescheduling -- Madagascar has been able to reduce its current account deficit to about 10 percent of GDP only through the drastic reduction of imports. Import reduction has had a major impact on industrial production. Foreign exchange therefore remains a critical requirement, although the World Bank (making use of its Special African Facility) has recently engaged in heavy lending programs to finance raw materials and other key imports for Madagascar's industrial sector (\$60 million, in 1985) and agriculture sector (\$60 million, planned in 1986).

- Rehabilitation of road and irrigation systems remains a critical priority: Major aid programs to address these problems have met with serious delays and most repairs on the major trunk roads only got underway in 1985. A government study to prioritize and cost out the work needed to put feeder roads into shape will not be ready for donors until at least September, 1986. Meanwhile, a promising multi-donor program for the rehabilitation of small irrigated perimeters, which began in 1985, has not had sufficient time to show results.

-- The rate of environmental decay is alarming and is receiving more attention: Madagascar, in the terms of a recent World Bank report, is perhaps "the most eroded place on earth". The great loss of arable land (by one reckoning, up to 1,000,000 ha per year) reduces not only rice production through the silting of paddies and canals but all other crops as well. Manioc production, for example, has decreased from 10 tons per hectare to 5-6 tons because of nutrient loss through erosion and leaching. Shifting agriculture accounts for the loss of 200,000 ha of forest cover each year (out of a total 12.4 million ha), including some of the country's most important watersheds. Rapidly rising charcoal costs signal an approaching fuelwood crisis. Also distressing is the damage being done to Madagascar's unique biological diversity, which the World Wildlife Fund reckons "could very well result in the loss of one of the most spectacular natural wonders of our planet before the turn of the century."

-- Population growth is rapid, and the rate may be increasing: Although statistics in this area are weak (the last national census was held in 1975 and never completed), Madagascar's rate of natural increase is estimated at 2.8 percent annually, with a total fertility rate of 6.4. As REDSO's population sector survey shows, fertility may increase as reduced breastfeeding and the success of health campaigns lower morbidity and mortality. This is even more likely where 46 percent of the population is under age 15 and in the absence of a family planning service program. Land tenure studies show that population pressures on available cultivable land are already intense. In the central highlands, land holdings are severely fragmented with only 10 percent of the farmers owning enough land to make a living. Whereas some sources estimate up to 5.5 million additional hectares may be brought into cultivation (compared with 2.8 million hectares currently farmed), necessary irrigation will be costly, far beyond what Madagascar can afford.

The basic problems remain the same. REDSO's essential view expressed two years ago in the CDSS still holds in 1986: "Madagascar has adequate resources to sustain a much higher level of economic production than has heretofore been achieved and additional economic reforms need to be designed to lay a better basis for

long-run economic progress, as well as to stimulate short-term recovery" (CDSS, p.9).

## II.B. Madagascar's Policy Reform:

Even if the principal characteristics of the Malagasy society and economy have not varied since 1984, the economic reform program has continued and grown. Herein lies Madagascar's chief prospect for recovery. The remainder of this section will summarize the Malagasy record with policy reform and will describe A.I.D.'S revised strategy in the planning period 1986-1990.\*

1. Stabilization Policy: Results overall since 1981 have been good, well above average for most African countries in Dr. Berg's view.\*
  - Madagascar has concluded five successive Stand-by agreements with the IMF since 1981. The first three were broken off and renegotiated. The 1984-85 agreement, however, was completely successful and all indications are positive that the 1985-86 agreement will be, as well.
  - The inflation rate has been lowered from over 30% in 1981-1982 to under 10% in 1984-85, although the recent soaring costs of food and fuelwood beginning in late 1985 will likely cause the overall rate of inflation to rise again.
  - Madagascar has reversed its record in 1984 as one of Africa's worst exchange rate adjusters, and real rates today are close to their 1978 levels. Informal estimates, however, are that the official rate is still 30-40 per cent overvalued.
  - The overall treasury deficit has been cut from over 18% of GDP in 1980 to 4.7% in 1984 and 1985.

---

\* This section relies heavily on the analysis prepared by Dr. Hadley Smith (REDSO), presented in the Annex and upon Dr. Elliot Berg's informal conclusions presented after his 18-day visit to Madagascar in January-February, 1986.

-- The Government has firmly held the line on civil service employment, allowing total numbers to grow by only 6% between 1981 and 1985, 121,000 to 129,000. Average real wages for higher level civil servants have been reduced by at least 50% since 1979, and have declined by about one third for lower level government workers. Wages for unskilled laborers (non- agricultural) have also fallen substantially in real terms.

2. Structural Reform: So far, results have been nil to modest, with various parts not wholly implemented as of December, 1985. Most of these reforms were announced in the course of the past two years, and have so far had little impact on production and exports. But there is now discernible movement to complete and extend most measures. We discuss below the use of funds from AFR's African Economic Policy Reform Program (AEPRP) to encourage this movement in the transport and export sectors.

- a. Industrial policy has decontrolled prices on products accounting for 61% of industrial value added (IVA), with another 9% expected in March, 1986. Only some 30 products will then remain under price control representing 30 percent of IVA, and, for these products, prices are to be brought into line with world prices. This decontrol of 70% of IVA will satisfy the major World Bank requirement for the release of the second tranche of the Industrial Sector Credit (plus Africa Facility Funds) and is considered a significant step forward.
- b. Import administration has improved (at least, before the foreign exchange crunch in mid-1985) with more responsive foreign exchange allocation to key sectors (e.g., transport) and with the elimination of quota restrictions on certain products for which the demand is known (e.g., pharmaceuticals).
- c. Export promotion policies remain a particular disappointment. Although some regulations have been loosened, delays and paperwork remain formidable. Nevertheless, exporters are now licenced to export a range of goods rather than only specific items, as previously. The government has eliminated export taxes on all

manufactured goods and has extended the foreign exchange retention scheme to all exporters of non-traditional exports. But the amount of retention is small (5%) and only 20 exporters have taken advantage of this provision. As noted elsewhere, more progress must be made, too, to devalue Madagascar's foreign exchange rate, which will in turn promote exports.

- d. Transport sector policies have not noticeably improved, and large-scale waste and inefficiency mark this sector, a crucial one for Madagascar's recovery. Many export producing areas are frequently isolated. Lack of spares and of fuel immobilize many, if not most, road vehicles. Port capacity and coastal vessels are in general disrepair. Rate policies introduce many distortions, for example discouraging the use of smaller vehicles on bad roads. Local authority controls further restrict traffic. Such improvement as is taking place in the transport sector is the result of the Government's non-enforcement of regulations and tariff structures.
- e. The investment climate has shown scant improvement since the passage of the new Investment Code in June, 1985, which, in any case, remains unapplied. Heavy regulations and official attitudes not favorable to export, combined with the political risks of expropriation (not laid to rest in the Code), and problems of foreign exchange and transport, have discouraged investor interest. By early 1986, however, there were signs that interest was quickening. For example, Mauritian entrepreneurs were negotiating to lease Government-owned hotels on Nosy Be, and had already leased the Hotel de Thermes in Antsirabe.
- f. Privatization of equity and management is occurring via creeping divestiture as state owned enterprises close down or diminish for want of funds. For example, SODEMO, an irrigation parastatal in Morondava, has reduced its staff from 1,500 to 500 over a three to four year period. Several state farms have been leased or sold. The government has signed agreements to turn over the management of state concerns (e.g., sugar export) to private international firms. A foreign firm specializing in plantation management was showing active interest in March, 1986 in reaching an

agreement with the Government to rehabilitate 4,500 ha of abandoned coffee plantations nationalized in the 1970's.

- g. Agriculture Policy Reform. Rice pricing and marketing has formed the centerpiece of Madagascar's reform program since 1984, when changes introduced in June, 1983 could have affect on an entire growing season. There were two principal decrees for the rice trade. The first permitted any trader licensed by the Chairman of the Provincial Executive Committee to buy rice, and gave permission to anyone to sell rice anywhere. The second measure fixed a floor price of 65 FMG/Kilo for paddy, a ceiling price for domestic rice at 300 FMG/Kilo, and a selling price of 140 FMG/Kilo for imported rice. The Government raised the paddy floor price to 75 FMG/Kilo in 1984 and to 85 FMG/Kilo a year later. In June, 1985 the Government abandoned the ceiling price. These two decrees applied nation-wide, with the major exception that the parastatals in the two leading rice surplus regions of Madagascar -- SOMALAC in Lac Alaotra and FIFABE in Marovoay -- retained their local monopolies to buy and sell rice.

In November, 1985, retail rice prices began to reach record levels (800 FMG/Kg vs. previous highs of 550 FMG/kg), causing great hardship to consumers as the prices of substitute foods correspondingly doubled or tripled. The rice reform program came under heavy fire from all sides. Some charged that speculators were to blame and that the private sector middleman robbed the farmer of the profits of his labor while also cheating the consumer. Others argued that interference by local officials, residual controls, and other vestiges of dirigiste policies prevented liberalization from ever working in the first place. The best evidence available at the time, however, suggests:

- (1.) that price rises have substantially benefitted the rice producers themselves, and not merely the millers and merchants, and;
- (2.) that the brunt of the blame for extraordinary price rises must be borne by the unusual scarcity of rice in the final two months of 1985, the result of government's bunching almost all 1985 rice

imports in the first six months of the year -- 98,200 tons between January and June (vs. only 61,700 tons imported in the first half of 1984).

Thus, at the beginning of July, 1985, after the celebrations for Independence (the twenty-fifth) and for the Revolutionary regime (its tenth) ended, only 22,000 tons of rice were left in public stocks. Together with additional imports of 14,000 more tons, the Government distributed a total of only 36,000 tons through public channels in the second half of 1985, contrasted with 76,000 tons in the first six months. Demand was deflected to the open market with consequent strong pressures on prices. In sum, this distorted supply situation, the result of inadequate import management, appears to have been at the root of the price surges which have nearly destroyed public support for the liberalization program. This experience forcefully underlines the Malagasy Government's present preoccupation with the need for a dependable rice supply, year round.

Many observers note that, just as there were few alternatives to undertaking the program in the first place when 1983 market controls proved increasingly unworkable, now Madagascar has little choice but to continue the liberalization effort. Thus, in March, 1986, Madagascar and the World Bank reached final agreement on a \$75 million agriculture sector package which will provide import credits and technical assistance to support the further freeing of agriculture prices and markets. The Government will terminate its monopoly on rice marketing in Lac Alaotra and Marovoay. The accord aims to revive private investment in agriculture. This package of agreements will lay the ground work for continued liberalization. But this package will not be sufficient in itself to provide the food security Madagascar will need in the next three years if the liberalization program is to succeed.

In the section which follows, we revise and elaborate upon the CDSS strategy proposed earlier (May, 1984) for the planning period, FY 1986-1990. In doing so, we recommend a series of specific interventions which will help set the stage for a full-scale CDSS revision in FY 1988.

### III. STRATEGY

Our analysis shows the predominance of agriculture in Madagascar's economy and society. The overarching goal of the U.S. economic assistance program should be, therefore, to assist Madagascar to realize its full agricultural potential, both in food and industrial crops for domestic (including industrial) consumption and for export (including processed goods). Food self-reliance (a term which includes production, storage, and trade) is at the heart of this goal: for humanitarian reasons, to assure adequate nutrition for the entire population; and for economic reasons, to release labor for other productive tasks and to conserve foreign exchange for a variety of other import requirements. This general goal -- food self-reliance -- must remain, for the time being, unquantified since Madagascar is still in the process of devising an integrated, costed plan for donor support.

More important than a detailed plan at this point, however, is to win full Malagasy acceptance for the free flow of market forces in realizing full agriculture potential. How shall Madagascar liberalize its agriculture sector? This is the point at issue in 1986. It will surely remain the prime issue in the Planning Period covered by this document. Shall the President attempt to achieve liberalization by fiat, under great pressure from principal donors, leading to intolerable price rises and to resistance at every level of central and local government? Or rather, shall the President's decision to liberalize meet with such firm donor support that import burdens are lightened, price surges held in check, and a production response surely and steadily ensured?

The primary objective of the U.S. economic assistance program in Madagascar must be the success of the current liberalization policy beginning with agriculture, especially rice. To ensure the success of agricultural liberalization on this island-continent, five measures are required. These include a set of actions designed to launch Madagascar on a long-term effort to keep demographic growth within the country's means to provide for itself. The rest of this section will take up each of these five points, indicating the programs and activities which A.I.D. will employ to achieve each target.

In designing this strategy, REDSO considered but rejected the option of concentrating a part or all of our attention on a specific geographic area (or areas) within Madagascar. First, policy reform is a nation-wide concern. Second, in supporting a private sector renaissance, we do not wish to limit ourselves, at least initially, to the good ideas from only particular regions. Third, regional development, to be

effective, involves several sectors and therefore is management intensive. And finally, we do not yet feel confident that we could select the "best" region(s) for A.I.D. involvement.

### III.A. Continuing Policy Dialogue:

The first barrier to the success of the Government's liberalization policy is that, apart from the comparatively small team of advisors and civil servants which has designed the reform program with the IMF and IBRD, most government officials at central and local levels do not understand the policy and have no clear idea of how it should work. As one highly placed official told us:

"We Malagasy have no experience with liberalization. Throughout our history, even in pre-colonial times, we have been centrally directed (dirigiste)."

When it became clear by 1983 that agriculture production had stagnated and that the Government had insufficient means, human and financial, to enforce controls and provide services, the Ratsiraka administration announced the start of the current reform program. But the final decision to liberalize was far from unanimous. Even leaving aside the ideological opponents, many Malagasy today have yet to be convinced that the policy can work.

The aim of Malagasy liberalizers is to find the right mix, for Madagascar, of private and public sector actions. To this end, A.I.D., in coordination with the Embassy and USIS, and in parallel with other free-world donors, will sponsor a number of initiatives:

- The APAP (Agriculture Policy Analysis Project) seminar: First organized in January, 1986 by Aht. Associates and funded from the MARS project, the two-day in-country seminar brought together 25 Division chiefs, principally from the two agriculture ministries and from the planning directorate in the Office of the President. The leaders were two North American economists familiar with current liberalization programs in Africa and Asia. A second 1987 seminar is planned under the MARS amendment for the same level personnel, or higher. If again successful, the policy seminar will occur annually throughout the planning period.
- Study/Observation tours: In preparation for the next APAP policy seminar, selected participants, at the

Director level or above, will visit Asian and African countries with liberalization program experience relevant to Madagascar's present situation. Examples: Zambia (foreign currency auctions) and China, Sri Lanka, and Indonesia (rice self-sufficiency). This travel, planned for FY 86-87, will be funded from the MARS amendment. If the study/observation tours are successful, additional ones will be provided under successor projects.

- Senior Economist Visit and Dialogue: Under the auspices of the APAP policy seminar, Dr. Elliot Berg visited Madagascar January 19-February 6, 1986. During this first visit, Berg met with many of Madagascar's top public and private sector decision-makers, for one-on-one discussions lasting up to one hour. He also assisted AID/Embassy in their monitoring of the liberalization process. A.I.D. plans to fund a return visit by Dr. Berg or (if unavailable) another senior U.S. economist on at least an annual basis, in association with the APAP policy seminar. Funding will come from the MARS amendment and successor projects.

- Feature Speakers: The Embassy and USIS, in close coordination with A.I.D., will continue to sponsor small group discussions and public lectures by U.S. French-speaking economists on aspects of the liberalization process. Dr. Berg, for example, led two sessions under USIS auspices during his visit in January, 1986.

It goes nearly without saying that AID/Embassy/USIS staff, beginning with the Ambassador, engage their Malagasy colleagues in discussions on a continual basis, throughout the year. Particularly striking to Malagasy officials is the extent to which A.I.D. depends upon PVO's and private sector contractors to deliver U.S. economic assistance.

- Data Collection, Processing, and Analysis: As needed, to complement the work done in this area by other donors (IBRD, UNDP/FAO), AID will provide short-term technical services, training, and equipment to provide Madagascar with the capability: (a) to monitor and fine-tune its new policies; and (b) to evaluate and identify agriculture sector programs for improved public resource allocation.

-- African Economic Policy Reform Program (AEPRP):  
Beginning in FY 1987, A.I.D. should carefully consider the use of AEPRP funds to encourage accelerated reform in one of two critical sectors.

- (a) Exports: As Hadley Smith illustrates (Annex), Madagascar's key balance of payment problem during the last five years has been the failure to increase export earnings significantly. State trading firms continue to enjoy monopoly rights over major exports, either directly (coffee, cloves, black pepper), or using private exporters as agents (vanilla). Despite inflation, the Government has maintained producer prices at low levels.
- (b) Transport: The analysis (above) has shown that Government policies continue to hamstring vehicle and coastal traffic, while the lack of vehicles and spare parts, as well as poorly maintained roads, often make it impossible to market food and export crops. Government hesitates to abandon official road tariff structures, despite the damaging anomalies these create. Local authority controls are endemic.

The mode of AEPRP intervention (e.g., cash grants, CIP), and the specific reform measures AEPRP could support, will depend upon the nature of the situation existing in FY 1987, at the time REDSO economists analyse these sectors in greater depth.

### III.B. Food Interventions:

As we have noted in the Analysis, liberalization measures tend to be discredited in times of extreme scarcity, as open market prices reach record levels. No liberalization program, especially one as young and vulnerable as Madagascar's, can weather more than several seasons of such hardship. Rice prices are particularly critical. AID/Embassy believe it is imperative that the United States, in close association with the World Bank and other interested donors, enter into a multi-year agreement with the Malagasy government to assure adequate food supplies -- rice, in particular -- as insurance against unacceptably high prices. In return, the Government would agree to two essential points: (a) complete decontrol of the production, collection, processing, and marketing of the commodity in question (e.g., rice); and (b) the distribution

of the imported commodities in counter cyclical fashion when local supplies are low.

The Food for Progress (FFP) Program appears to be well suited to Malagasy requirements. Linked to the agreement on rice marketing with the World Bank, FFP (combined with PL 480 Title I, if reserves were insufficient) could assure a substantial portion of the rice imports which Madagascar will require over the 1986-1990 period. The full grant terms of Food for Progress would achieve a considerable balance of payments advantage for Madagascar over the terms of the current PL 480 Title I Program (54 percent grant element in 1984). This is fitting, too, in view of the fact that Title I rice, even without transport costs, sells for about \$100/MT above Thai broken rice (\$287 average for 1983-1985 vs. \$180). If Food for Progress commodities are not available in the quantities required for Madagascar, we recommend that Madagascar be granted the most favorable Title I terms (grant element 67 percent) now enjoyed by certain other countries in the region also suffering similar severe balance of payment difficulties.

Although rice is the leading commodity for inclusion under a multi-year Food for Progress Program, REDSO has begun to analyze the U.S. comparative advantage in providing other items: wheat and tallow, as well as vegetable oil. The U.S. has already supplied vegoil under Title I agreements in FY 1983, 1984, and 1986. This analysis must now continue on the basis of the terms and products available under the 1985 Farm Bill, especially the expanded Section 416, as well as under Food for Progress.

We will consider further on how the counterpart funds generated by food aid should be used in support of the three remaining components of the Madagascar country program.

### III.C. Agriculture Production Response:

The decontrol of agriculture markets, including higher prices to farmers, will not achieve the desired effect unless productive capacity in Madagascar also increases. Impassable roads, dilapidated irrigation systems, worn-out genetic materials, and the colossal erosion which silts up rice areas are formidable obstacles to higher, marketed production even if agriculture prices are sufficiently high to provide incentive. A necessary part of A.I.D.'s strategy in support of Madagascar's liberalization program, therefore, must be to help restore productive capacity at the level of the small producer, especially the rice farmer, as quickly as possible. In this effort, A.I.D. will be joining the World Bank, France, the

European Development Fund, and the other important aid donors which support agriculture rehabilitation in Madagascar.

A.I.D.'s interventions will be limited to three categories as they apply in particular to the rice-based production system.

- To improve the basic technology available to the farmer, A.I.D. will continue the contract with the International Rice Research Institute (IRRI) to introduce new varieties and to train a Malagasy rice research team in rice based cropping systems research. IRRI began to work in Madagascar in August, 1984. Although the Island needs to introduce new varieties of seed and agricultural methods to improve upon the numerous and diverse traditional rice cultures in use, Malagasy authorities had prohibited new rice varieties from entering over the past twenty years and thus had effectively sealed the country off from Asia's green revolution. Under the current A.I.D. program, IRRI has carefully selected for Malagasy conditions 1,000 rice varieties from the world germ plasm stores and is introducing this material as quickly as local quarantine procedures will allow. The two man IRRI team in residence reported that, of the 288 new varieties which had been multiplied and tested as of January, 1986, many showed "great potential" and were producing 30-40 percent more than preferred local materials. The production of basic seed material, following on the IRRI genetic work with FOFIFA (the agriculture research institute), and the extension of new methods associated with the new varieties will be the work of on-going projects funded by the UNDP and World Bank, respectively. IRRI is also introducing and testing with local private sector fabricators simple but improved small farm machinery -- technology which can break an acute bottleneck in Malagasy rice farming operations.
- To improve infrastructure upon which the small farmer depends, A.I.D. will continue to direct a portion of the counterpart funds generated by PL 480 sales to rehabilitate water management networks, roads, and storage points upon which small farmers depend for the production and marketing of their products. Again, rice based production systems will be our primary concern. We will give preference to the use of counterpart funds in support of World Bank and other donor programs which address the concern of small farmer productivity, especially (but not uniquely) in infrastructure. There are two advantages to the use of a portion of counterpart funds in association with

other donor programs. First, this simplifies the management of local funds; and, second, it ensures a greater measure of coordination with the other donors and Malagasy government agencies working in the same areas of concentration as we are. REDSO/ESA has contracted in March, 1986 for an evaluation of the work funded by the \$7.0 million of PL 480 counterpart funds disbursed since the first agreement was signed in FY 1981. Beginning in April, 1986, AID/Antan will add a senior Malagasy officer to its permanent staff who will be charged, among other duties, with the monitoring of this portion of the counterpart program.

- Environmental rehabilitation is a present requirement in Madagascar, where, as we have seen in our analysis, soil erosion has reached epidemic proportions. For example, according to government figures, Madagascar's leading rice production area, Lac Alaotra, loses up to 3,000 hectares of rice paddy each year from watershed erosion, equal to the annual amount of new land brought into production in the region. A.I.D. will help to protect farm lands -- rice areas in particular -- from soil erosion. We will use two means: first, for policy makers and research personnel, training in agro-forestry techniques as offered, for example, by the International Center for Research in Agro-Forestry (ICRAF) and by the International Institute for Tropical Agriculture (IITA), sometimes jointly; and, second, through the use of counterpart funds to support local projects and other donor programs which effectively tackle the severe problem of soil erosion in agriculture regions.
- Finally, in order to demonstrate the results which could be achieved by combining improved technology, renewed roads and dike systems, anti-erosion controls, and price policy changes, A.I.D., through counterpart funds and in association with other donors, could mount a pilot project in a well-defined geographical area provided that full-time PVO management could be secured. A.I.D. will consider support for such a project at such a time as the Government invites PVO's to operate freely in Madagascar.

#### III.D. Private Sector Involvement:

The small farmer, if he is to increase his production in response to higher price incentives, will also require commodities and services. Since Malagasy state owned

enterprises (SOE's) have not proven effective in supplying the farmer with what he needs, or (with certain exceptions) in transforming what he produces, these tasks must fall increasingly to the private sector, including the private management of public bodies. Under present circumstances in Madagascar, where private capital is scarce, creeping divestiture is in many cases a more viable option than outright privatization. And until foreign confidence picks up, private sector gains will be made for the most part by domestic entrepreneurs.

- Parastatal reform and divestiture is imperative, given the stronghold SOE's have over every area of the economy. Under REDSO's Indefinite Quantity Contract, with funding from the MARS amendment beginning in FY 1986, and picking up from work already started by the World Bank, AID will begin to work with the two agriculture ministries to reform 5-10 selected parastatals under their jurisdiction. If this experience bears fruit, we will continue to assist with parastatal reform and divestiture under successor bilateral projects.
- Studies focused on the private sector, financed from counterpart, bilateral, and central funds, should serve to identify opportunities for male and female entrepreneurs, including redundant civil service employees and unemployed graduates of technical schools and the University. These studies might include:
  - The rehabilitation of old coffee and cocoa plantations;
  - Ways to encourage small contractors for road maintenance (equipment leasing), and for new housing and related infrastructure production and rehabilitation;
  - Private production of agriculture equipment based on IRRI models;
  - Privatization of government services in rural areas which now work poorly;
  - Privatization of secondary ports (user associations) and coastal shipping;

- Marketing of locally produced stoves, using fuel-efficient designs;
  - Replication of small locally managed milling operations, using hydro-power installations patterned after the AID-funded pilot project at Ampefy. (This facility is scheduled to begin operations in 1986);
  - Local counterpart support for private sector export promotion activities;
  - Use of counterpart monies for private sector export insurance and finance.
- Private sector credit would be made available for the local currency requirements (from PL 480 counterpart funds) and for foreign exchange needs (from ESF funds) of enterprises meeting certain criteria, especially for activities which might grow out of the type of AID-sponsored studies suggested above. Equator Advisory Services, funded by AFR/PRE, has made a detailed proposal (January, 1986) for establishing a private sector investment fund. Under this proposal, the fund would operate under the state-owned industrial bank (BNI) until an independent development finance company can be established. This scheme, Equator maintains, requires that A.I.D. provide long-term technical assistance. An alternative proposal is that A.I.D. channel counterpart funds through Madagascar's agriculture development bank (BTM), in conjunction with a World Bank line of credit which will be available in 1986. This credit will provide both foreign exchange (\$4.0 million) and technical assistance (\$1.0 million). Either or both alternatives provide interim channels for credit to private enterprise associated with agriculture production and processing, for domestic or foreign markets. We will seek to ensure that women as well as men have access to this credit.
- Training in management and economics, which already accounts for the major portion of AID/Antan's training budget, will continue with a growing emphasis on the techniques of business administration. We will study ways in which A.I.D.-financed training and PL 480 counterpart financing may reinforce local training institutions. In August, 1985, the University of Pittsburgh held a successful project management seminar with IMaTeP, a Malagasy training institute for

economic planners. Later in 1986, the World Bank will extend an \$ 8.0 million credit to finance in part the establishment of the National Institute of Accounting and Management (INSCA) whose purpose will be to improve the operation of both public and private enterprises.

- U.S. private investors who express interest in Madagascar will continue to receive AID/Embassy support. "The Private Sector Climate Assessment" produced by ISTI with AFR/PRE funding (October, 1986) is not encouraging, but the environment for investors could substantially improve as liberalization takes hold. AID/Embassy will also encourage Malagasy interest, through study tours and in other ways, in the Export Processing Zone approach which is having exceptional success in nearby Mauritius.
- Commodity Import Programs (other than food imports) will continue to be channeled through the private sector with particular concern for the requirements of farm-based production. Madagascar, in all sectors and at all levels, has been starved in recent years for imported goods to make the economy turn. The \$4.5 million commodity import component within the 1985 MARS project, for small tractors, road repair equipment, spare parts, and bridging elements, will be increased under the MARS amendment in 1986 by \$2.2 million, to include light trucks. CIP components of future ESF-funded programs must be based, however, upon careful needs assessments, given the substantial imports now being financed by the World Bank, especially under the \$60 million industrial sector credit (1985-6) and the \$60 million agriculture sector credit (1986).

### III.E. POPULATION AND FAMILY HEALTH:

Increasing population pressure on Madagascar's rain-fed arable land resources lies behind many of the immediate -- not to speak of long-range -- problems which confront the country: deforestation, erosion, fragmentation of land holdings, and the increasingly unmanageable build-up of low income families in Antananarivo and other urban centers, where evidence of abortion and abandoned children is increasing. Although contraceptive prevalence in 1982 was estimated at one per cent of women aged 15-49, the demand for services appears to far surpass this figure. The Government has articulated no official population policy and the issue remains both controversial and sensitive. But there is recent

evidence that Malagasy authorities are taking increasing note of population problems and may be moving towards an active role. The Government permits family planning services in private clinics (FISA) and through a few major parastatals (JIRAMA, SOLIMA). The U.S. has already contributed, with the Government's approval, both family health training (notably JHPIEGO) and material. Recently, the Direction of Plan has requested U.S. assistance in conducting a national seminar on population and development, to be held in conjunction with the preparation in 1987 of the next five-year plan. Proof of the Health Ministry's growing interest in the population area is the signing with UNFPA in 1986 of an important MCH training and planning project, after official stalling had delayed final agreement on the project for seven years.

To pinpoint for A.I.D. which centrally-funded services would be most appropriate to develop a long-term family planning program in Madagascar, REDSO/ESA organized a sector survey, "Madagascar: Population and Family Health Assessment, May 13-31, 1985." The survey analyzed the requirements for family planning in Madagascar, reviewed activities underway or planned, and recommended how A.I.D. could help at minimum management cost. In October, 1985, the Government accepted the survey's recommendation in the priority ranking given below. These activities constitute the major portion of A.I.D.'s proposed population program during the CDSS plan period. The survey stressed that due to the sensitivity of the subject, A.I.D. should move slowly in phasing in these various elements so as to impose no pressure on Government and to reduce management burdens on A.I.D. (Names in parentheses indicate potential contract instruments.)

1. Strengthening family health service delivery within the Ministry of Health: These activities involve the orientation of professional health personnel to the health benefits of child-spacing practices, as well as provide for the upgrading of clinical skills (International Training in Health - INTRAH, and Johns Hopkins Program for International Education in Gynecology and Obstetrics - JHPIEGO).
2. Population policy: To assist the Director of Plan to organize a national seminar on population and development, A.I.D. will employ the Futures Group through the RAPID II project. This seminar will likely be held in early 1987. To assist the Direction of Plan and the State Data Bank (both within the Office of the President) to incorporate demographic variables into development planning, A.I.D. will continue the short term training of planners (BUCEN, INPLAN, and Demographic Data for Development - DDD).

3. Demographic Statistics and Research: When the Government decides to organize the next general census, probably set to begin in 1988, A.I.D. will finance the provision through the Bureau of the Census (BUCEN) of short-term technical assistance, training, and software. Sometime after this, if requested by the Government, a survey should be designed and executed for planning and evaluation purposes (Family Health and Demographic Surveys Project-FHDS).
4. Support to existing private and parastatal organizations: Support for existing child-spacing services should continue through the provision of commodities, equipment, supplies, and training (FPJA). The Association for Voluntary Surgical Contraception (AVSC) should also continue its work, but broadened to include a full range of services and information. As already agreed, A.I.D. will provide support through the International Federation for Family Life Promotion (IFFLP) to the local natural family planning association, FTK.
5. Information, Education and Communication (IEC): Finally, and only after the above activities are well underway, A.I.D. will assist the Ministry of Health to introduce child spacing into its family health service program. A.I.D.'s contractor, the Population Communication Services Project (PCS), will help the Ministry design and develop a strong IEC program, which UNFPA and/or other donors can then help the Ministry to implement.

In addition to these direct actions in the domain of family planning, A.I.D., through the Catholic Relief Services (CRS), will continue, and may increase by 25 percent, PL 480 Title II support to mothers and babies (79,000 recipients in 1986), school-aged children (14,000), and disadvantaged children (4,000). The proposed level of the CRS Title II program in FY 1987, with 125,000 recipients, is about \$2.3 million. This number of recipients will remain constant through at least FY 1989.

Finally, AID/Antan is investigating the feasibility of supporting, through an allocation of counterpart currencies, the oral rehydration and immunization portions of UNICEF's \$9.4 million country-wide Child Survival and Development/Universal Child Immunizations Project (1986-1990). The local costs of the ORT and immunization activities have still to be calculated over this five-year period. They will include a modest amount for the local management and monitoring of these components under UNICEF direction. It is a necessary precondition of our assistance that A.I.D. shall not assume management

responsibilities, given AID/Antan's modest staff resources. A.I.D. support for this program will not only satisfy a high Agency priority; U.S. participation will also round out our family health program with an important emphasis on child survival.

The A.I.D. Family Health Program in Madagascar will be entirely financed from centrally funded projects. REDSO/ESA will assure technical direction. REDSO's Regional Population Officer will be helped by a U.S. advisor under contract, who will assist in the scheduling, monitoring, and evaluation of the work of the separate organizations and who will visit Madagascar on a regular basis. Local backstopping will be provided by AID/Antan's senior Malagasy staff officer, who has had over five years previous professional experience with population activities in Madagascar.

#### III.F. Uses of Counterpart Currencies:

The five point strategy outlined above proposes three general uses of counterpart currencies. For the rest of the planning period, these funds may total at least the level realized in FY 1986, \$10 million per year -- \$8 million in PL 480 and \$2 million in ESF-supported commodity imports. These uses are, in summary:

- Private sector line of credit: For an interim period only this credit would pass through the special facility of one or two of Madagascar's state banking institutions, until an independent development finance company can be established. We would set up this fund at an initial level of \$1.0 million until certain that the fund was working well. Then larger amounts could be added. Counterpart will also be used to pay at least a portion of the local costs of the studies focused on the private sector proposed above, as well as support for management training carried out locally. We are considering other proposals to use counterpart funds to support local costs of a national export commission (\$150,000/yr.) and an export insurance and finance scheme (\$2.0 million), as well as a housing production scheme utilizing cyclone resistant building techniques. The private sector category may grow to absorb one half or more of U.S. counterpart funds annually.
- Agriculture Productivity: Here the focus is on breaking the technical, infrastructure, and environmental bottlenecks to agriculture productivity, as farmers respond to higher producer prices.

Counterpart would continue to be used to support the local costs of specific kinds of activities included in the Public Investment Program for IRRI and rice cropping systems research (\$3.8 million total in FY 87-88, but declining thereafter); for the rehabilitation of rural water systems, irrigation works, feeder roads, and crop storage points (\$4.0 million/year); and for the practice of soil conservation - agro-forestry measures (\$1.0 million/year). To the maximum extent possible, U.S. counterpart funds will be used to meet these objectives in conjunction with the foreign exchange contributions of other major donors.

- Family Health operation: Counterpart funds will support the ORT and immunization components of UNICEF's five year Child Survival and Development project in Madagascar (est.\$1.0 million/year).
- To these three categories must be added a fourth, Disaster Preparedness: Madagascar is cyclone-prone. Although spared a major disaster in 1985 and thus far in 1986, Madagascar faces the high probability that at least one hurricane storm will strike population centers in any particular 3-4 year cycle, as Kamisy did in April, 1984. Counterpart funds (\$1.8 million) from FY 1984 Title II monetarization have been used to establish a Disaster Preparedness Fund and additional amounts may be added in future, as required. This fund will assist multi-sectoral relief measures, in as flexible manner as possible.

A small proportion of counterpart currencies generated from the CIP (grant) program will be set aside in a trust fund to pay most of the local costs of managing the A.I.D. program on Madagascar.

There are advantages and disadvantages to projectizing U.S. counterpart funds. The disadvantage is that the use of local funds to support projects inevitably involves both diplomatic skills and management time in the selection and monitoring of projects to meet U.S. program criteria. The U.S. counterpart program has thus encountered significant delays in Madagascar where REDSO has insisted upon, and has received, meticulous accounting and careful investment. Thus, out of the \$37.0 million equivalent in counterpart funds deposited in Central Bank accounts as of

September 30, 1985 (corresponding to the total of PL 480 Title I agreements in consecutive years FY 1981 through FY 1985), only 66 percent had been allocated to projects as of that date. Moreover, only 20 percent of the total deposited had been disbursed.

Three alternative uses of U.S. counterpart funds have been suggested to eliminate the management time and delays which projects have entailed. One suggestion is that counterpart funds could be used to retire internal debt, especially the obligations of carefully selected, reformed parastatals. Alternatively, counterpart might be used to set up a civil service early-retirement fund with necessary safeguards against payoffs and other abuses. Thirdly, counterpart funds might be employed to compensate the government for reductions which it would agree to make in export taxes on specified items, where such taxes still exist.

The principal argument in favor of using counterpart funds to mount projects is that these funds appear to be exceptionally useful in Madagascar to achieve very tangible results. This view will be subject to confirmation by the thorough evaluation which REDSO commissioned in March, 1986. But this view rests upon the findings of AID/Embassy/REDSO officers during visits to projects, and by other donors who have remarked on the outstanding results at the village level of USAID counterpart investments. Moreover, the Directorate of Plan prefers the use of counterpart funds in support of projects and has promised in 1986 to present donors with a more efficient means to expedite project selection and disbursement.

The scheme presented in this CDSS Up-date, under the four categories described above, seeks to combine the advantages of both systems. To the extent that A.I.D. channels counterpart funds to the private sector through intermediary credit institutions, or to other beneficiaries as a component of other donor programs, A.I.D.'s management burden is reduced. To this extent, AID/Antan will then have the management capacity to monitor the use of remaining counterpart funds to remove technological, infrastructure, and environmental constraints on the small farm producer.

SUMMARY OF STRATEGY

1. POLICY DIALOGUE
  - APAP Seminar
  - Study/Observation Tours
  - Senior Economist
  - Feature Speakers
  - Data Collection and Analysis
  - AEPRP
2. FOOD INTERVENTION
  - Food for Progress
  - Rice and other Commodities
3. AGRICULTURE PRODUCTION RESPONSE
  - Technology (IRRI)
  - Infrastructure Rehabilitation
  - Environmental Rehabilitation
  - Demonstration Project (if PVO available)
4. PRIVATE SECTOR INVOLVEMENT
  - Parastatal Reform and Divestiture
  - Studies
  - Credit (Counterpart and ESF)
  - Training
  - U.S. Investors
  - Commodity Import Program (Non-Food)
5. POPULATION AND FAMILY HEALTH
  - 5-Point Plan
  - Title II MCH (with CRS)
  - UNICEF ORT/Immunization

#### IV. RESOURCE REQUIREMENTS.

After a space of twelve years, AID in September 1984 reestablished a U.S. Direct Hire presence in Madagascar as part of REDSO/ESA's personnel ceiling. This sole officer reports directly to the Director, REDSO/ESA, who is responsible for AID's activities in Madagascar. At the time of writing in March, 1986, AID/Antan was comprised of:

- One USDH (Program Officer/Madagascar, assigned to REDSO/ESA)
- One Malagasy Program Assistant, full-time (contract)
- One American Management Assistant, part-time (contract)
- One Malagasy receptionist/secretary, full time (contract)

In addition to these core staff, AID/Antan also employed two local expatriate personnel on a short-time contract basis. AID/Antan maintained a manpower contract for two drivers and six house guards.

A.I.D.'s office in Antananarivo was located in two borrowed rooms on the ground floor of the small American Embassy building. The office managed a program in FY 1985 which totalled nearly \$19.0 million. REDSO/ESA personnel, in fact as well as on paper, formed an integral part of this management team, with essential design and supervisory roles.

In the period April-September, 1986, AID/Antan plans to consolidate management operations in two principal ways: by adding a second USDH officer and a senior Malagasy officer (contract), and by occupying one floor of the leased building attached to the Embassy which until late 1985 housed the U.S.M.C. guard detachment.

REDSO believes that this staff and space allocation, with access to the two TDY apartments (as available) on the top floor of the ex-Marine House, with the work space they provide, should be sufficient to manage the Madagascar program over the 1986-1990 planning period. REDSO and RFMC will continue to provide essential controller and personnel services, in addition to technical expertise (DH and contract) to help with the PL 480 program, other commodity imports, population actions, and other activities proposed in this strategy. The Regional Housing and Urban Development Office (RHUDO/ESA) will continue to support the small scale private sector housing

construction program, with assistance from REDSO/ESA and the Office of Foreign Disaster Assistance (OFDA), as required. By tapping into AID/Washington's centrally funded contracts with international agriculture research centers (e.g., IRRI), with economic analysts (e.g., the APAP project), and with private sector consultants (managed by AFR/PRE), AID/Antan will continue to work in relationship with important sources of assistance outside A.I.D.

AID/Antan will continue to rely upon the unusually close working relationship which has been established with the U.S. Embassy, especially in the promotion of private sector and commercial programs. The Embassy will continue to provide support in such essential areas as communications, currency exchange and security services.

We recommend that in March-April, 1987, AID/W together with REDSO conduct a management review of the Madagascar program, in order to determine if USDH staff levels are adequate given the rising level of REDSO commitments elsewhere in the region. The FY 87 Management Review will also offer an opportunity to study the continued appropriateness of REDSO/ESA's direction of the Madagascar program.

TABLE 1. MADAGASCAR: Projected AID Funding Levels: FY 1986-1990  
(\$ U.S. Thousands)

<u>Funding Source</u>	<u>FY 1986</u>	<u>FY 1987</u>	<u>FY 1988</u>	<u>FY 1989</u>	<u>FY 1990</u>
ESF	2,870	5,000	7,000	9,000	10,000
PL 480 Title I	8,000	9,000	9,500	9,500	9,500
Title II	2,262	2,296	2,330	2,400	2,400
Other					
DA	1,000	2,200	2,400	2,500	2,800
ARDN	1,000	2,200	2,400	2,500	2,800
EHR					
SDP					
Regional Projects (AMDP, POP, EIA)	250	300	300	300	300
Total (all services)	15,382	20,996	23,930	26,200	27,800

\*These AAPL levels were assigned for planning purposes only, before passage of the Gramm-Rudman-Hollings legislation in December, 1985.

SA 117-4 2.4

SOCIAL ANALYSIS AND PROGRAM RECOMMENDATIONS:  
MADAGASCAR CDSS UPDATE

Dr. Carolyn Barnes, REDSO/ESA  
January 1986

## Table of Contents

	Page
INTRODUCTION.....	1
SUMMARY OF SOCIAL ANALYSIS.....	1
INCOME AND HUNGER	
Land Distribution and Use.....	2
Land and Tree Tenure.....	9
Hunger.....	12
Incomes.....	14
POPULATION AND FACTORS AFFECTING THE ACCEPTANCE OF FAMILY PLANNING.....	15
HEALTH DEFICIENCIES	
Morbidity and Mortality.....	18
Immunization.....	19
Local Medicinal Plants.....	20
Nutrition.....	20
ON-GOING AND PROPOSED RESEARCH.....	22
STRATEGY	
Overview.....	26
Discussion of Specific Objectives.....	29

## INTRODUCTION

The information in this paper is based on key interviews carried out in Madagascar and on written sources. Since the previous CDSS, the results of a few new studies are available which provide a better understanding of the current social conditions in Madagascar. Also, the social analyst has had the opportunity to review previous studies which were not available to the FY 1986 CDSS team. Nevertheless, numerous other field studies, such as those carried out by the Department of Development Research of the Center for Agricultural and Rural Development Research (FOFIFA) and pre-1975 materials have not been reviewed due to time and accessibility. Also, time constraints have prevented the inclusion of an analysis of key institutions. Information on government institutions is available in several documents such as World Bank reports, the UNICEF Situation Analysis and special reports undertaken by consultants for AID.

Organization of the following presentation is based on AID/W overall guidance on conceptual organization of the problem areas and specific guidance on the Madagascar CDSS update.

## SUMMARY OF SOCIAL ANALYSIS

Madagascar has a complex social system with important regional variations. Inequities tend to reflect historical settlement patterns and sociopolitical events. In the crop producing regions the poor have small rice plots and low levels of both in-kind and cash income. Particularly the poor are dependent on hillside land and the clearing of primary and secondary forests for cultivation. The problem of hunger is manifest in several ways and seems to be increasing.

Malnutrition is high among children. Also, the infant mortality rates are high. The GDRM, with UNICEF assistance, has been carrying out an Expanded Program of Immunization but coverage rates should be increased. Family planning services effectively reach only one percent of the target group.

There is a growing body of relevant data which will provide a basis for sound policy analysis and program/project design.

7

## INCOME AND HUNGER

### Land Distribution and Use

About 80 percent of all Malagasy families derive income from agricultural production, whether from rice, cultivation of other crops, livestock husbandry or a combination of these. There are significant differences in access to land, ecological conditions and the value of the crops grown which relate to level of income and hunger. More detailed information on this exists for the central highlands than for other geographic regions.

The central highlands is located in the provinces of Antananarivo and Fianarantsoa. These two provinces, which include other agroecological zones in addition to the highlands, have the highest population densities and account for 52 percent of the total population of Madagascar. In central highland localities where a rigid caste system existed, the amount of land, especially for rice production, currently controlled and owned by a household and their access to water for irrigation, reflect the caste of the family's lineage. Farmers gain access to more land through sharecropping and leasing arrangements. There is evidence that land poor families are increasingly forced to sell a portion of their holding when an emergency requiring cash arises.

Several case studies document differences in land distribution and use. While the pattern of holdings is not highly skewed when ecological factors are taken into account, the differences are significant in terms of a household's ability to meet its basic needs from agriculture. A 1984 study conducted by G. Rakotonirainy et. al. for FAO compares two sites. One site has a history of a strong caste system, is inhabited by Merina, and is located 50km. from the capital city within Antananarivo Province. The second community, within the traditional heartland of the Betsileo, is in Fianarantsoa Province. The size and distribution of riceland is more skewed in the Antananarivo than in the Fianarantsoa community. In the former 43 percent of the agriculturalists have less than 50 ares\* of riceland, whereas 8 percent each have more than 200 ares. In the Fianarantsoa sample, 29 percent of the agriculturalists have less than 50 ares and 11 percent had more than 200 ares. In both communities the smaller the rice land owned the greater the percentage the non-rice, hillside land (called tanety and herein referred to as hillside land) is of the total land owned. For example in both communities for those with less than 15 ares of riceland, the hillside land accounted for 70 - 74 percent of their holding. Nevertheless, in terms of actual size of the hillside land controlled by each

\*One hundred ares equal one hectare.

farming household, the size tends to increase as the size of the rice holding increases. For example, in the Fianarantsoa community those with more than 100 ares of riceland average 113 ares of hillside land, whereas those with less than 15 ares of riceland average only 43 ares of hillside land.

The Midwest region in comparison with the central highlands is more sparsely populated and has poorer soils and less rainfall. A study by FOFIFA of 433 households in 12 fokontany (group of villages) revealed that 16 percent had no land. Of those with land, 54 percent have less than 2.5 ha., 11 percent have 2.5-3 ha. and 35 percent have more than 3 ha. In general, the size of the hillside plots were larger than the rice fields. Most households had more than one parcel of each type of field. In the sample 18 percent of the households had no rice land while only 8 percent had no hillside land. Those households which controlled over 3 ha. of land often had some under sharecropping.

In the Midwest about three-quarters of the landowning households in the FOFIFA sample combine crop production with livestock production, cattle and/or pig raising. The Bara and the Sakalava who are known for raising livestock also practice crop production. In the area inhabited by the Bara, ecological conditions favor rice production and the area is usually self-sufficient in rice. The Sakalava tend to place less emphasis on crops than do the Bara, which is attributable to ecological conditions.

A study conducted by C. Kottak in 1966-67, in three communities in Fianarantsoa Province shows the diversity of settlement patterns and differences in access to key resources. His findings document that historical socioeconomic inequalities are mirrored in the current situation. His research also reveals significant practices and behaviors related to rice production. Kottak's findings show that farmers with more than one rice field tend to invest more labor in the traditionally more productive fields. Soil type influences the cultivation techniques and labor requirements. The labor inputs and yields vary with the type of rice cultivated, which is only partially a function of soil type. The traditional variety of rice, whose taste is preferred, is grown for domestic consumption, but balanced against other varieties in terms of labor, amount of land, soil type, and potential yields.

The main events in rice production are transplanting and harvesting and these are associated with a traditional division of labor based on age and sex. These major tasks, as well as

25

others, were often done with communal labor. However, communal labor parties whose traditional reward was food and drink are gradually becoming obsolete and are being replaced by paid labor.

Kottak's data show that the intensification of labor inputs on poor land can actually result in yields comparable to those obtained from better soils. In a study site with poor land conditions, the people worked between two and three times more on their rice fields, and in fact the yields were slightly higher than in the other two communities studied. The same community was poorer than the others and relied on family and communal labor.

When labor expended in drying and pounding rice for family household consumption is included in the calculations on the number of hours men and women devote to rice production, women tend to spend more hours than men on rice. If it is not included, men spend more time. On average an adult woman, solely or with assistance from children, spends about 300 hours a year pounding rice for family consumption.

A socioeconomic baseline study undertaken by the Highlands Rice Project in the Antsirabe area of Fianarantsoa Province in 1984 showed that 60 percent of the families farmed 25 percent of land surveyed and each had less than 20 ares of paddy land. In comparison, 10 percent of the farm families averaged 120 ares which accounted for 42 percent of the total land area. The survey also revealed that many farmers have large numbers of very small plots for rice. In the communities studied by Kottak, the average number of rice plots per community ranged from 7 to 12.

The fragmentation of riceland may appear extremely inefficient. In the central highlands it is the result of the inheritance system of the Betsileo and Merina, which is ambilineal, tending towards patriliney. A man inherits rights to cultivate on the ancestral estate of his mother's as well as his father's family. The man may choose to reside in his mother's village, or just to activate rights to cultivate there. Activation of the right to cultivate invokes a host of obligations, such as lending labor to assist others. A Betsileo woman cannot inherit paddy land but can inherit hillside agricultural land. In contrast, a Merina woman inherits rights to both types of land. The rights of inheritance of land, even if not invoked, are usually maintained through participation in ancestral tomb-centered ceremonies, which oblige the person to give gifts. Access particularly to rice land is an intricate part of the entire

236

social fabric and cultural history of Madagascar. Associated with this is access to water for irrigation which is just as important. However, no research seems to have been done on organizational forms, rights and responsibilities associated with water.

Both the smaller traditional and smaller government-assisted rice irrigation schemes appear to be better managed than larger government assisted ones. This is probably a result of community cooperation on the small, older schemes which has a historical precedence. Community cooperation is evident in the repair and maintenance of irrigation infrastructure, allocation of water, and communal labor.

—The degree of cooperation among households in a community is normally related to the historical pattern of settlement and kinship affiliation. Communities recently settled, such as around government assisted large irrigation schemes, and comprising several kinship groups are less cohesive than others.

Because of the relatively high population densities and skewed distribution of land in the central highlands, there has been permanent migration over the decades within the highlands to areas of lower agricultural potential and movement into other regions. Permanent migration is motivated by the desire to obtain wage employment and to obtain land. Government schemes in other regions have provided some relief to the highlands. In the Midwest region a common pattern has been for migrants to engage in wage employment or sharecropping but eventually to obtain land. While no hard data are available, it is likely that those who migrate are the poor whose ancestors were slaves and commoners since these people would probably feel the strongest push towards leaving the area of their ancestral tombs. Kottak points to cases where over time a community has its regional appendage and tombs are built in the newer community. Permanent migrants usually do not give up land claims in their original home area, but allocate these land resources to close members of their family. Also, migrants normally maintain their claims to land through participation in ceremonies in the original home area.

27.

Over the decades migration has also been from regions other than the highlands. For example, people from the southwest have settled in Sakalava territory. Anthropologist R. Huntington has concluded that Madagascar shows a pattern of continuous migration and while there are cultural variations and ethnic categories, there seems to be little correlation between the two.

The Lac Alaotra region located northeast of the central highlands has absorbed migrants since the early 1900s. The region originally inhabited by Sihanaka people attracted Merina and Betsileo in the early 1900s. During the colonial period large French concessions established in the area drew large numbers of migrant laborers, many of whom settled and eventually became landholders.

In 1962 the Societe Malagasy d'Amenagement du Lac Alaotra (SOMALAC) was created to redistribute modern irrigated land and further the development of irrigation. Some 7,500 families benefited from land distribution, receiving on average a 4 ha. plot. Sixty-six percent of the plots were 3-5 ha., 15 percent were less than 3 ha., and 19 percent were more than 5 ha. The size of the land allocated varied according to traditional land claims and productive potential of the land. Smaller plots, averaging 1.4 ha., were later allocated to farm families. Especially among families with larger holding, family labor is insufficient. This has led to some 15-30 percent of the total land area being farmed under a tenancy or sharecropping arrangement. Also the demand for seasonal labor, particularly for transplanting and harvesting relies on temporary migrants mainly from the central highlands.

The Lac Alaotra area is primarily a rice producing area, with approximately 68,000 ha. under rice cultivation. Almost half of the rice area (35,000 ha.) is under modern irrigated schemes, whose operation and maintenance is the responsibility of SOMALAC and the Ministry of Agricultural Production and Agrarian Reform (MPARA). The rest is under traditional irrigation. The region, however, annually loses up to 3,000 ha. of rice paddies due to poor maintenance of the primary irrigation system and to siltation and sand deposition resulting from erosion in the lake's watershed. The rice

23

marketed from the Lac Alaotra region represents about a third of the total marketed production in Madagascar. Rainfed agriculture also occurs on the hillsides and covers some 8,000 ha. Cassava, maize, beans and groundnuts are the main crops. Cattle are also important in the regional economy.

The main export crops are grown in the humid tropical areas which extend inward along the eastern coast, except for the extreme south and north. According to a 1984 World Bank report between 20-35 percent of all rural households are engaged in production of export crops. Most of these households produce export crop on a small scale, as shown below.

Total number of producers	Coffee	Vanilla	Cloves	Pepper	Cocoa
small traditional farmers	345,000	65,000	70,000	59,500	2,000
small commercial farmers	5,000	5,000	8,000	5,000	-
plantation type	10-50	1	2,000	-	n.a.
Average farm size (ha.)					
small traditional farmers	.5	.34	.9	.1	.4
small commercial farmers	4.5	1.0	3.1	.4	-
plantation type	50-2,000	12.0	9.5	400	500- 2,000

The World Bank report states that the low price paid to producers has led smallscale farmers to neglect their cash crops and concentrate on production of food crops. Specific local studies carried out earlier, confirm the priority peasant farmers give to securing their domestic food needs. It is also apparent that difficulties in transport and receipt of payment add to the reluctance of farmers to invest significantly in the production of cash crops.

In recent years, migration has contributed to problems which reflect a growing pressure on the land. For example, in the Midwest and Southeast agricultural settlements on land previously used for pasture have placed greater pressure on available grazing land and occasionally fighting breaks out between the inhabitants and the newcomers. Migration combined with the natural rate of increase of population has led to clearing of forests for crop production, and poor management of the land which results in high rates of soil erosion and a decrease in biological diversity. Erosion in turn has caused serious impediments to irrigation within the watershed catchment area. It is estimated that erosion puts out of rice production as many hectares as is brought into production each year. (See the REDSO/ESA Energy and Natural Resource CDSS Update Report.)

The national Conference on Conservation of Natural Resources for Development was held in late 1985 and drew international support and involvement. The background documents, and reportedly many of the discussions, revealed a superficial perspective of the causes of and solutions to the current misuse and mismanagement of natural resources. The problem, however, is real. Clearing of natural and secondary forests for agricultural production is a result of land pressure felt in these areas and of the conditions of poverty in which the people find themselves. Erosion, which plays havoc with large investments in irrigation, is similarly a result of misuse of the land within the watershed, as people become more and more dependent on hillside farming and livestock to sustain themselves and their families. Further, redressive, corrective measures to protect the soil are limited by institutional factors, including the extremely limited number of GDRM staff to address the problem. The training and awareness campaigns proposed in a conference background paper are unlikely to stem the increasing deterioration of the natural resource base upon which the nation is dependent for its livelihood since this approach ignores the underlying causes and measures needed to address these causes.

The data on land use and distribution indicate that the poor tend to have small rice plots. For the poor, non-rice, hillside land is extremely important for earning an income to meet basic needs. Attention to rainfed crops other than rice which have a good nutritional value, market potential, and

40

ability to contribute to maintenance of soil fertility would particularly address the rural poor. Greater productivity on rice land through improved land and water use, and cultivation of a second crop during the dry season, would be of value in securing food and cash income for at least a portion of the households. However, attention also needs to be given to production of crops on the hillsides.

Recently the National Assembly enacted legislation which will affect rice cultivators. This legislation permits the formation of water user associations and will assist them to become financially autonomous by being empowered to collect user fees and to establish bank accounts. The intent is to establish and gradually strengthen the ability of users to finance at least minor repairs and maintenance of irrigation works. The overall financial ability to raise funds will vary based on the size of the scheme and on the number of users. However, these associations should develop a local financial maintenance capability to provide some assurance that external funds invested in repair or rehabilitation of these schemes will be sound. The ability to enforce the collection of user fees ought to be closely monitored. It is likely that on schemes with strong community cooperation, financial assistance from others may be forthcoming to assist households who through exception circumstances are unable to meet an obligation.

#### Land and Tree Tenure

Land tenure is significant since it relates to access to land, land distribution and land usage which includes protection of the soil, watershed management, and production of trees for woodfuel and building materials. Rights to land such as ownership, inheritance, use and disposal may be held by different parties at different times. These factors affect the level of income obtainable from agriculture.

Three basic forms of land tenure systems currently exist:

- individual, private property
- communal or corporate property
- state property composed of (i) public domain and (ii) collective property under cooperatives

Land law was introduced as early as 1891 and has undergone many phases. A major attempt was made at land reform in the 1970s which involved state expropriation of large estates and encouragement of widespread smallholdings, state farms, and collectives. Sharecropping and all forms of feudal obligations were forbidden, although there are few means of enforcing this. Agents have tended to discourage abusive sharecropping arrangements and encouraged fixed-rent contracts. In 1974 legislation introduced the idea of a social obligation to develop, maintain and use land. This was aimed particularly at those who claim land for speculation and for their descendants rather than putting it under production. If for a period of more than five years an owner of more than 5 ha. of land has not farmed the land personally or at his/her own cost, legally the property should be transferred to the state. (Land put under crops, trees and fallow are deemed by this regulation as farmed.) All sharecroppers or tenant farmers on such land are legally bestowed the right of preemption to the land. In spite of the far-reaching implications of this regulation, there appears to be no enforcement.

Different tenure arrangements, de facto and de jure, operate within local communities. Because of the historical importance of rice the claims to rice land are usually established de jure. For example, a farmer's parcel of irrigated rice land may be officially registered in his name, whereas the hillside land may be cultivated through traditional rights. Claims to hillside land for cultivation and to grazing land often follow traditional customary patterns.

In the Sakalava region, which extends along the western coast and inland, land nominally belongs to the local chief. Usufruct rights to cropland and grazing land however are maintained in perpetuity, unless difficulties arise with the local chief. Sakalava families sometimes move from one chiefdom to another because of conflict with the original chief or family feuds over inheritance. The Sakalava territory consists of numerous small chiefdoms and low population densities. Over the decade non-Sakalava have become integrated in the region. Also, in the past two decades government assisted irrigation schemes have attracted outsiders.

In areas of low population density in the coastal areas, sharecropping seems to be rare. However, some renting and loaning of land without a monetary charge occurs which actually signifies rights of acquisition. This takes place mainly through immigrants marrying into an indigenous family, the allocation of land to the young, and returning migrants asserting claims to land. While land is not sold per se, the person acquiring the rights of exploitation is usually obliged to perform work for the original claimant.

46

The Midwest has also been a region attracting immigrants over the years. During the colonial period immigrants sought wage labor and eventually claimed and cultivated land of their own. Currently about 16 percent of the rural households do not own land. Most of these are engaged in sharecropping. Because of the lack of unclaimed land suitable for rice and hillside cultivation, it is unlikely that the historical pattern of those engaged in sharecropping eventually holding land will continue.

Plots allocated on irrigation schemes fall under various tenure arrangements. Titles can be acquired in two of the largest parastatal rice schemes, FIFABE and SOMALAC at Lac Alaotra. In the Lac Alaotra area (the one most studied), after consolidation and redistribution of land, farmers were given lease-purchase agreements. The agreement provided that after 12 years of cultivation, mortgage and tax payment, the farmer would receive a title. The first titles were given out in 1983 to some farmers who had met their obligations within Lac Alaotra. Thirteen different types of sharecropping, land rental and hired labor contracts have been identified. (Data from the scheme show that the highest yields often come from rented land.) This occurs mainly because the holding sizes are larger than can be farmed by the farm family. Over the years, however, through inheritance, the individual farm sizes should diminish.

There is some evidence to show that in the densely populated areas of the central highlands, there is competition within families over the control of land. As land registration progresses, competition occurs between brothers. With a title, adults tend to hold the land in their name until they die, leaving sons with low status because they are not yet landowners. Parents who wish to sell a portion of their land are occasionally challenged in the courts by their heirs. The individual titled land seems to deprive women of their traditional rights to land in their family estate. The implications of increasing land pressure and individual ownership, are unclear for intrahousehold income distribution.

Less is known about tree tenure. In a central highlands area where a Swiss/GDRM agroforestry pilot project is being implemented, hill slopes are State land. The community insisted on registration of some of the land as individual holdings prior to planting trees. The insistence on land security prior to investing time and money in tree planting probably is true for other interventions aimed at watershed management and applicable nationwide.

Private and "communal" woodlots exist in the central highlands. The social regulations govern communal woodlots, however are not understood nor documented. It may be that the communal woodlots actually belong to a specific extended family. Lack of knowledge about community woodlots hinders an assessment of the feasibility of their promotion and of encouraging improvement and management of existing ones. Some woodlots are classified as sacred, communal forests. Apparently with clove trees and vanilla vines, the planter has exclusive rights.

In 1985 a new policy was formulated and announced with the aim of encouraging tree planting. The regulation states that:

the tree belongs to the person who planted it and

the planter who has correctly reafforested following written specifications will be given the right to own the reafforested land

The specifications are extremely strict and implementation will be difficult. If implemented, it is likely that this regulation will have both a positive and negative impact. While it ought to encourage the establishment of private woodlots, the wealthier people will be the ones who will be able to take advantage of this regulation. Reafforestation by wealthier people may indirectly benefit others through improved soil control and greater access to wood for sale, but may deprive future generations of poorer families access to hillside land for crop production.

### Hunger

Due to multiple causes, hunger appears to be increasing. The GDRM has decontrolled the price and marketing of rice as a measure to increase production and improve distribution. Over the past few years the price of rice has fluctuated greatly. For example, in 1984 after harvest a kilo of white rice was 100-120 Fmg, while during the dry season the price rose to 500-600 Fmg. In November 1985 the price was 725 Fmg for a kilo of white rice in Antananarivo. Poorer families without a sufficient supply of domestically produced rice are hard pressed to purchase the amount deemed necessary to feed themselves. It is also likely that the high price has encouraged some families to sell some of their domestic supply to meet critical cash needs. The decontrol of rice marketing to promote a more effective and efficient system has left a gap yet to be filled by the private sector. This is particularly

true in regions which are traditionally dependent on movement of rice from surplus areas. These difficulties may continue until the private sector is willing and able to respond to marketing opportunities and an increased supply of rice decreases the price.

Yet, other symptoms point to the possibility of a deeper crisis. A decrease in the grinding capacity in surplus areas (excluding SOMALAC and FOFIBE) hinders movement of rice to deficit areas since transportation of processed rice is more efficient than of paddy. In the highlands as in other parts of the country, household production of groundnuts for domestic consumption and sale has decreased due to the poor quality of the seeds and disease problems. Even vegetable production is reported to have declined for lack of new seeds. The GDRM's extremely strict quarantine regulations prevent importation of new germ plasm. Recent smallscale nutritional studies show relatively high rates of malnutrition among children. The main urban centers have a larger number of beggars and street people. Formerly when rice was unobtainable by poorer families manioc and maize served as substitutes. So why should there be more hunger now? The increases in hunger may reflect regional patterns which drive the poor into the main urban centers.

It is likely that the lack of access to basic agricultural inputs especially improved seeds, and the deterioration of basic productive infrastructure, such as irrigation, combined with population pressure on the fragile ecosystem have locked numerous smallscale farmers into a cycle of poverty from which they are unable to respond despite recent policy changes. Because of the small amount and quality of the land owned, a small percentage of households are unlikely to meet most of their needs from farming unless there is a major technological breakthrough. A much larger percentage of smallscale farm households, however, have the requisite land resources but need greater accessibility to low-cost inputs and many need financial assistance, in the form of more opportunities for off-farm employment or loans, to break out of their poverty trap.

Before increases in the price of rice, when prices were controlled by the GDRM, food consumption patterns reflected economic status. The wealthier households consumed more meat, vegetables and other nutritious foods, while the diets of poorer households consisted largely of rice.

While food taboos are practiced, they do not appear to be among the main causes of hunger. Food taboos may apply to a large ancestral group, a family, or a few individuals. The taboos involve prohibitions against eating certain types of

animals or fish, eating certain types of relishes or fruits, or drinking certain beverages. For example, among the Sakalava there is a prohibition against rearing and or eating zebu cattle with certain types of coloration patterns. Approximately 25 percent of the population observe a prohibition against eating pork, but this does not diminish the importance of pig rearing and marketing in the Midwest and central highland regions.

Over the past two years the GDRM has monitored food consumption and sales of farmers (see section on On-going and Proposed Research). However, currently the information is not accessible to donor agencies nor will it be made public. This is the direct consequence of the GDRM experience when a donor used the information against the GDRM to press for specific policy reforms and when a consultant used information to advocate a specific course of policy action rather than to set out policy alternatives. The information is indeed politically sensitive.

#### Incomes

No studies are available which analyze levels of income needed to sustain a minimal standard of living by urban and rural households. Neither is there recent nationwide data on patterns of income distribution. A few case studies do point to the dynamics of income distribution and composition.

In the communities covered in the FAO study discussed above (under Land Distribution and Use) almost all households in the Antananarivo Province community had a non-agricultural source of income, which is related to the peri-urban status of the community. In comparison, the Fianarantsoa community's main source of off-farm income was from the occasional sale of labor and normally accounted for less than 10,000 Fmg annually. The researchers found that almost all households with an agricultural revenue above 200,000 Fmg concentrated on farming, indicating structural problems which push others into informal sector activities and wage labor to supplement agricultural production to meet domestic needs.

The same study shows a direct relationship within each community between total income and amount of rice land owned. In each community families with smaller rice plots had lower total incomes, even when accounting for income from non-farming sources. The range of sources and levels of off-farm income however, were much higher in the periurban community than in the Fianarantsoa community. In the latter only 37 percent derived some income from off-farm activities, compared with 88

percent in the periurban area. Reflecting the lack of options in the Fianarantsoa community, 76 percent of those with off-farm sources of income worked as occasional laborers, in comparison with only 39 percent in the Antananarivo community. Total annual incomes were estimated as follows:

Total Household Income (Percentage)					
	Below 200,000	200- 300,000	300- 400,000	400,000 +	Nu.
Antananarivo community	39	13	42	6	206
Fianarantsoa community	57	21	6	16	273
Both	50	17	20	13	479

The income estimates above include agricultural and non-agricultural income and do not take into account expenditure on agricultural production. The FAO study estimates annual minimum expenditure for food and major items for a family of six. The budget is far from inclusive and does not set out alternative expenditures on food, but rather bases it on a rice consumption diet. However, it does indicate a poverty class for families earning below 200,000 Fmg.

The legal basic minimum wage rates for low wage earners have kept pace with the increase in prices for basic consumer goods. It is unclear, however, if the wage rates are set as a family wage rate or to cover basic needs of the individual workers.

#### POPULATION AND FACTORS AFFECTING THE ACCEPTANCE OF FAMILY PLANNING

Madagascar has approximately 10 million people (1985). In 1975 when the last population census was taken, 16 percent of the total population (7.6 million) were living in the 47 urban areas. One-third of the urban population, however, resided in the capital city of Antananarivo. According to 1980 data, the average number of people per household is 5.16, with a medium of 4.02. The 1975 population census showed that households tend to be smaller in urban areas than in rural areas and that 23 percent of the urban compared with 14 percent of the rural households are headed by women.

The highest rural population densities occur in sections of Antananarivo and Fianarantsoa provinces, where there are between 50 - 100 people per km<sup>2</sup>. Other concentrations of population (20 - 50 people per km<sup>2</sup>) are found in the eastern coastal areas. Inter-provincial migration, either permanent or temporary, account for the distribution of approximately 10 percent of the 1975 population. An analysis of the net migration by province reveals a negative flow in Fianarantsoa and Tulear provinces. Those migrating from Fianarantsoa go mainly to Antananarivo and Majunga Provinces, while those from Tulear mainly migrate to Majunga and Diego Suarez provinces. Not surprisingly, the provinces of Antananarivo and Majunga have net increases in migrants. Migration is mainly to rural areas for employment and there does not appear to be a large differential between the rate of migration of males and females, indicating that entire families move.

The legal age of marriage is 17 for males and 14 for females. Information from the 1975 population census shows that 10 percent of the rural males and 39 percent of the rural females were married before age 20. The average age was 19.6 for females and 22.9 for males. Polygamy has been legally prohibited since the 1960s, but is still practiced in some coastal areas, especially Tulear Province. The general tendency is for a newly married couple to establish residency at the home of the husband's parents. Marriage patterns vary according to socioeconomic status. Among the proscriptions governing marriage, none appears as strong as the proscription against intermarriage of descendants of free people and slaves. Marriage involves bridewealth transfers. Among the Betsileo, custom recognizes a trial marriage period to allow the groom and his family to evaluate not only the potential wife's appropriateness as wife and daughter-in-law but also her procreative powers. Marriages are often finalized after the birth of a child. The customary wish of happiness to a newly married couple, among some groups, is the wish that they have seven boys and seven girls.

The actual fertility rate is less. The 1975 census showed a fertility rate of 6.4, whereas data from the 1980 household budget survey by INSRE gave a fertility rate of 5.8. Malagasy generally assert that they like to have as many descendants as possible to comfort them in old age, to attend their funerals, and to conduct ancestral rites. At least outside the densely populated central highlands, it appears children still have an important economic role in performing agricultural and other domestic tasks. In the central highlands, though, land pressure results in the desire of agnates to control exclusive access to family estate and limit claims from other relatives such as sister's sons. An adjustment mechanism exists through

the custom of fosterage, usually with relatives, although it is possible that with the increasing conditions of poverty this system is under stress. Fosterage is often at the suggestion of an astrologer or diviner. Belief in the supernatural realm is strong among all Malgasy groups and includes a belief in a person's destiny. Every condition and event is deemed to have a cause, often personalistic.

The customary supernatural realm exists side by side and is often incorporated with adherence to Christianity and "modern" science. Almost half of the population report themselves to be Christian. The Christians are almost evenly divided between Roman Catholics and Protestants. About fifty percent of the population follow a traditional religion. The upper strata of society and leadership of the country consists primarily of Christians.

The Catholic church is active in the provision of social services and it can be assumed that they will only advance natural family planning methods. However, because of the Malagasy sense of privacy this method is unlikely to gain many followers.

Currently family planning services serve less than one percent of the target population. Fianakaviana Sambatra (FISA), the main private voluntary organization providing family planning services, has stringent eligibility criteria for women wishing to receive contraceptives. A woman must present proof that she is married or living in a consensual union, must obtain her husband's signature on a consent form, and provide two photos for her FISA membership card. Also, contraceptives are furnished to a woman only when she is menstruating. While these criteria are not enforced to the same extent in all FISA clinics, they certainly limit access and discourage women from seeking services. It is generally considered that FISA has such criteria to prevent criticisms being levied by the GDRM and more vocal members of the public.

Among the middle and upper urban class married couples, it is not unusual for a woman to have limited her family to less than 4 children. Women have obtained IUDs and other contraceptives while outside Madagascar. There is also evidence of the use of abortion in urban and rural areas to limit the number of children. Thus, it appears that a significant although maybe small percentage of the target population would readily welcome greater access to family planning services. A better understanding of the receptivity to family planning will be available when the results of 1985 survey are analyzed. Attitudes, knowledge and practices in regard to population and family planning were covered in a 1985

nationwide survey of over 8,000 males and females aged 15 years and older. The survey will provide information on views of males and females of varying socioeconomic status (see section on On-going and Proposed Research).

## HEALTH DEFICIENCIES

### Morbidity and Mortality\*

The life expectancy of a Malagasy woman is 45.9 years and that of a man 44.8 years. Poor health of pregnant women and the need for them to continue to carry out arduous tasks contribute to miscarriages, low birth weights and maternal deaths. The maternal death rate was estimated to be around 1.3 percent in 1980, with regional variations from .09 percent to 2.4 percent. Ministry of Health Statistics for the first semester of September 1984 showed maternal mortality at 4.6 percent. The number of miscarriages/abortions has been estimated to be at 50 per 1,000 pregnancies. A small survey undertaken reveals that 14 percent of the new borns are underweight (less than 2500 grams).

Causes of morbidity in adults tend to vary by geographic region, reflecting climatic factors. Respiratory diseases are predominate in the highland province of Antananarivo, while infectious, parasitic and digestive diseases prevail in the coastal areas. Some 25 percent of all recorded infectious diseases are due to malaria. Health service facility records indicate an overall death rate of 18 per 1,000 inhabitants. Most of the deaths (78%) recorded in health facilities were of children aged between 0 and one year. Eighty percent of the recorded deaths of children under the age of 5 were caused by transmittable diseases.

The mortality records from health facilities indicate that mothers are prone to take sick children to modern health facilities for care, while adults are less likely to turn to these facilities when seriously ill. The latter is probably due to a belief in witchcraft and sorcery which prevails among the Malagasy. Illness and death are often considered to have personal causes. Nevertheless, most Malagasy like Africans blend the belief in the supernatural causes of illness with faith in modern medicine.

In the past few years there has been a problem in regards to availability of chloroquine. None has been available in many health facilities. What has been available has been reserved for children. The problem of availability is caused by a scarcity of foreign currency.

\* This is primarily based on information from UNICEF 1984.

The rate of infant mortality is uncertain. Calculations in 1975 on the basis of information from a post-census survey showed the rate to be 72 per thousand. The rate was reexamined in 1981 following the introduction of a new health statistics system and showed a national rate of 92 per thousand, the highest being in the western province of Mahajanga (148 per thousand). A study carried out in 1978 covering some 3,000 mothers attending maternal and infant health centers gave a rate of 144 per thousand. It is generally considered that the rate is more on the high side, at over 100 per thousand. It is hoped that the effort to improve statistics on births, deaths and other vital population statistics, undertaken on a sample of 10 percent of the fokontany and 1.2 million inhabitants through the Service of Health and Demographic Statistics in the Ministry of Health, with assistance from UNFPA, will result in better basic statistics.

### Immunization

Since 1976 Madagascar has had an Expanded Program of Immunization (EPI) for tuberculosis, diphtheria, whooping cough and tetanus. Initially the poliomyelitis vaccination was given only in those areas where the disease was thought to be abnormally frequent, but currently it is provided nationwide to the target population. Vaccination against measles has not been included in the program because of the high cost of the vaccine and its relative thermal instability. However, measles vaccination began to be included in the EPI program in late 1985.

The official target for diphtheria, tuberculosis and whooping cough and polio vaccination is the 0 - 4 year old group, with priority given to the 0 - 1 year old, for whom the death rate is higher. Information from 1984, however, shows that the vaccines have been allocated to the 0 - 2 year old group. In 1984, 404,134 children ages 0 - 24 months received BCG vaccination or approximately 38 percent of all those within this age range. Children born in health facilities now receive BCG at birth. Madagascar manufactures approximately 2 million doses of BCG vaccine a year. The rate is expected to increase with modernization of the factory. In 1984 approximately 43 percent of the 0 - 24 month old received the first diphtheria injection, but only 27 percent received the third injection. The same year an estimated 28 percent of the 0 - 24 month old received their first polio booster and 16 percent the third injection. No data for 1984 were available in regard to regional distribution.

In 1980, four years after the introduction of the EPI, the national coverage for diphtheria, tuberculosis and whooping cough for the 0 - 4 year old group was estimated at 32 percent. Variation by region was, however, great: 45 percent in Antananarivo Province and only 17 percent and 16 percent in Toliary and Mahajanga provinces respectively. The coverage rate for BCG was about 34.5 percent with less regional variation: 45 percent for Antananarivo to 29 percent for Mahajanga. The 1980 record showed, however, a drop-out rate of more than 50 percent between the first and third DTP injections.

A combination of obstacles need to be overcome in improving and expanding the EPI coverage. The greatest is the logistics problem and setting up of cold storage chains. Second, further attention needs to be given to staff motivation and training in communication and education. Third, more public awareness and education is required because of the lack of comprehension and understanding of parents, prevalent in certain regions, which hinders immunization of their children.

#### Local Medicinal Plants

There is the potential of valuable medicinal plants being located in Madagascar, which has 72 plant varieties located nowhere else in the world. It is estimated that as many as 85% of the Malgasy plants are endemic to Madagascar. This endemism extends into the level of both the genus and family. The potential utility of the Madagascar flora is not limited to the field of medicine. Madagascar has as many as 50 wild species of coffee and 5-6 species of wild vanilla.

Several older, mainly locally-focused studies, report the use of indigenous medicines. The medicinal properties of these have not been analyzed. There is considerable concern that the existence of potentially valuable plants is increasingly threatened through the clearing and burning of natural vegetation for agricultural production.

#### Nutrition

No new data exist on a nationwide basis to document the extent and distribution of low levels of nutrition. However, a nutritional survey was carried out among 651 households in parts of Antananarivo and Fianarantsoa provinces. The survey was conducted jointly by the staff of the Ministry of Health and of the Highlands Rice Project, financed by the World Bank, and with technical and financial assistance from UNICEF. The survey sampled 998 children between the ages of 0 and 60 months, using anthropometric measurement of height, weight and

age. The results show a high incidence of malnutrition. Thirty-four percent of the children surveyed had a weight for age equal to or less than 80 percent of the WHO standards. Sixty-one percent revealed a height for age equal to or less than 90 percent of the WHO standard. The incidence of acute malnutrition indicated by low weight for height, using an 80 percent mark according to WHO standards, was revealed to be less than one percent of the surveyed children.

In comparison, a survey undertaken in child health care centers in rural areas of Antananarivo District in 1979 showed 2.3 percent of the children aged 0 - 72 months with acute malnutrition and 32 percent with age for weight less than 80 percent WHO standards. This latter survey indicated a relationship between malnutrition and the number of children in the family. In families with more than 6 children, 35 percent of those sampled were malnourished, compared with 27 percent of the children from families of five or less children. It was also found that the rate of diarrhoea was two times higher among malnourished than well nourished children.

The UNICEF assisted study referred to above was carried out on the same sample as those covered in the socioeconomic baseline survey for the Highlands Rice Project. Therefore, it would be possible to further analyze the data to study the relationship between food availability and child nutritional levels. To date, however, this has not been carried out due to other demands on Project staff and lack of funds for a consultant.

Data from the 59 Catholic Relief Services' maternal and child health centers also serve to document the low nutritional status of Malagasy children. Children aged 0 - 60 months who are enrolled in the CRS clinics show little improvement in nutritional status over a period of time in spite of the receipt of the CRS food package and parental agreements on use of the food. For the period December 1984 - May 1985, 52 percent of the children were below the 80 percentile age for weight ratio. The lowest rate was in Tulear area (39 percent) and the highest in Antsirabe (69 percent). Data collected in June 1985, the harvest period, showed a slight improvement: 47 percent of the children were under the 80 percentile age for weight. No significant differences appear between age categories.

UNICEF intends to support and aid further smallscale surveys in the coming years. Where possible the intent is to attach the surveys to an on-going rural development program so that the infrastructure will be in place for any follow-up action. It is unlikely however, that the opportunity to piggy-back the survey on top of another will present itself.

A combination of factors appear to cause malnutrition among children: lack of food, low levels of immunization, unclean drinking water, and lack of access to nutritional foods. Also, there are significant nutrient losses when rice is processed manually. A CRS report notes that their nutrition education component at the MCH centers is hindered by the lack of nutritional foods in local markets for demonstration.

#### ON-GOING AND PROPOSED RESEARCH

The National Institute of Statistics and Economic Research carried out a Household Income and Expenditure Survey in 1978. At the time of the CDSS FY 1986 it was hoped that the survey could be tabulated, analyzed and published with assistance from AID to provide a better understanding of poverty groups. A USAID-financed assessment by the US Bureau of Census and the US Department of Agriculture in 1985, however, pointed to methodological problems of the survey. First, the rural survey, including semi-urban areas, was disrupted because of financial problems so that fieldwork was reduced to 7 days per household and the data collected over a period of only 8 months, with two visits per household. The survey of the large urban centers was carried out as planned: each household being visited on a daily basis for 10 consecutive days and three times per household at 4-month intervals. The field work was done in two tranches, three years apart. Thus, adjustments for inflation in prices and earning index and for general economic conditions would be required to make the two comparable. Second, the fourth seasonal cycle was not covered in the rural survey, and because of seasonal variations in income from agriculture it would be difficult to project. Finally, no information was collected on size of the farm holding, a major indicator of wealth.

In spite of these difficulties, the consultants concluded that it might be useful for the Institute to concentrate on the urban household data, with help from outside assistants. The Institute has requested assistance from AID under MARS I, to edit, tabulate, analyze and publish the data. The Institute considers that the training and learning experience are as important as the end-product. This is reasonable and justifiable.

As of July 1985 the Institute was transformed into the General Directorate of the State Data Bank and attached to the Presidency. Its responsibilities have yet to be finalized. Nevertheless, it is expected to continue to be responsible for conducting an annual survey of industry, a monthly price survey and for monitoring the civil registration and vehicle registration systems. Also, it will continue to be responsible

for the population census and probably other special, national surveys. The Institute undertook its first population census in 1975. Although the date of the next population census has not been finalized, it appears that it may occur in 1987 to provide information for the 1988-1992 national plan. Because of the relatively short period for adequate planning, outside technical assistance will be required to help plan for the census. The content of the census will be decided by an interministerial committee. Based on the last census, it will probably provide a data base for analyzing migration patterns, age structure of the population, fertility and mortality rates, size and structure of households, and educational levels.

Additional nationwide data will be available from the large-scale sample census of agriculture which was begun in July 1984 by the Ministry of Agricultural Production and Agrarian Reform with assistance from FAO and supplemental support from AID through use of local currency. Problems in timing and logistics, exacerbated by financial constraints, made it necessary for the field work to be divided : the northern half of the country was covered during the first 6 months and the southern half during the second six-month period, with some arrangements for quick trips to the north to collect production data. Information is also being gathered on post-harvest losses, and production costs and yields of the main crops. A special survey is being carried out on large scale farms.

The sample agricultural census will provide cursory data on land tenure arrangements such as if the farm family owns, sharecrops, grants or leases land. Although sharecropping is illegal, there does not appear to be a conscious effort among those engaged in the system, particularly the sharecroppers, to withhold information. But, in cases where ancestors of slaves and of clients maintain in perpetuity the right to use but not dispose of land registered under the descendants of the original patron, it is unclear under what tenure form the land will be reported. Also, the census data will not provide information on the intrahousehold dynamics of rights to land.. Nevertheless, an analysis of this data will permit an assessment of the geographic distribution and magnitude of the different tenure patterns on farms. These patterns can be assessed in regard to other variables to determine if there is a positive correlation with investment in agricultural production and with agricultural output.

In addition, the sample agricultural census will permit an identification and analysis of the poor in regard to land tenure arrangements, land size, agricultural output, ownership of agricultural implements, size and structure of the labor

force, and sex of household head. However, it will not permit an analysis of the structure of household income since off-farm sources were not covered. The census will also facilitate a study of the structure and composition of farming households. The statistical unit in MPARA intends to analyze the data according to socioeconomic variables, although this is of lower priority for MPARA than other types of analysis.

There is no organization or branch of government which has a permanent structure to gather social and economic data from rural and urban households. However, the MPARA, with assistance from FAO, intends to establish a permanent system in the statistical unit for collection of agricultural data based on a national sample. This would provide yearly statistics on crop areas and production and would facilitate crop forecasting. The unit would also conduct special surveys and has already identified soil erosion as a topic for a special survey.

For the last two years the statistical unit in MPARA in collaboration with the Rice Coordination Unit, has been collecting data on a regular bases from a sample of households in urban centers and in nine of the 16 agroecological zones to determine food consumption patterns, especially of rice. This is done through acquisition of information on household expenditures including the consumption of food produced domestically. This survey is expected to continue.

Also, MPARA is responsible for technical and socioeconomic studies in regard to rice schemes slated for rehabilitation. For some of the larger schemes, consultancy firms are hired to carry out the studies. For the small schemes, a system is being developed and financed under a World Bank project. A questionnaire has been designed to obtain technical, social and economic data from individual riceland farmers.

The National Center for Applied Research on Rural Development has four departments concerned with technical research. A fifth, the Department of Development Research, provides supporting services to the other departments and helps with the economic interpretation of research results. This department also carries out regional socioeconomic studies, but activity is greatly restricted by a lack of personnel (see Tom Zalla, Data Analysis Capabilities within the Agricultural Sector of Madagascar, UDSA/AID, March 13, 1985). Currently the Department's work centers on four regions. In the Lac Alaotra region the focus is on seasonal labor migration and on constraints to the adoption of technological innovations. To date the research in the Midwest has consisted of a large diagnostic survey centered on crop and

jt

livestock production. Work in the coastal southeast has been on coffee production. Research in the Highlands centers on constraints to the introduction of specific new crops and on areas from which seasonal labor migrates to Lac Alaotra. The Department, using survey methods, tends to focus on constraints to the adoption of improved technologies and on ways to overcome these. The research does not give adequate attention to risk aversion strategies and intrahousehold dynamics, both important factors related to agricultural production.

An economic study is currently being conducted through FOFIFA by a U.S. Ph.D. student which addresses the interaction of policy and production options of highland farmers using a linear programming analysis.

Discussions and informal training sessions have been held with FOFIFA staff by short term farming systems experts. This was done under MARS I and in preparation for a national conference on agricultural research priorities.

In 1985 a survey was conducted by the the Ministry of Population, with assistance from UNFPA. Information will be available on views of males and females of varying socioeconomic status concerning:

whether the population in their locality has increased or decreased during the past decade, and the problems this has created,

reasons for preferring either large or small family sizes,

the causes of female and male sterility,

abortion,

provision of sex education to young males and females, and on population education,

the causes of premature and delayed child births,

the number of meals eaten during the harvest season and summer,

the age at which children should be given mixed foods,

the causes of the most frequent childhood and adult illnesses,

the utility of bush fires and

exhumation.

51

In recent, on-going and proposed research three important socioeconomic and institutional topics appear to have been neglected. First, little seems to have been done on the interface at local levels between farming households and public and private services (such as produce and agricultural input markets, and agroprocessing facilities) especially since the enactment of new economic policies on pricing and marketing. Though much has been written on the structure and functions of government institutions, there is limited information on the access of male and females to such services. While the fokontany has been instituted as a major local level community organization for decision-making, the degree of democratic decision-making, the ability to enforce decisions, and other aspects of how they work has not been researched.

Second, no studies appear to have been undertaken within the framework of intrahousehold dynamics to assess the loci of decision making, control over resources, gender distinctions and so forth. The research does not include male and female farmers' perceptions of major problems, their adjustment strategies, and views on possible solutions to these problems.

Third, studies of community dynamics and cooperation have been neglected. Although people speak of numerous small community level organizations, their objectives, degree of commitment, access to resources, and so on have not been the subject of research. In particular local studies should be related to rice irrigation schemes, woodlots and establishment and maintenance of mini-hydropower facilities.

## STRATEGY

### Overview

Currently microlevel social and economic data are not available for a comparative regional analysis of conditions of poverty which could be used to determine a regional focus for the AID program. Moreover, the specific objectives suggested for AID's program can best be achieved by maintaining a national level focus. This does not preclude a regional focus within bilateral projects when appropriate. The program objectives suggested herein are based on the recognition of the need to keep AID's management burdens at a minimal in Antananarivo, REDSO/ESA, and Washington. It assumes that there will be two direct hire officers and three full time non-direct hire staff to oversee the program. It is proposed that assistance be provided by AID to selected aspects of on-going programs and to new projects in collaboration with other donor agencies.

98

AID ought to continue to focus on the rehabilitation of the agricultural sector. Attention to food crops is justified since Malagasy farmers tend to devote resources to secure adequate production of food crops for domestic consumption prior to allocation of resources to the production of cash crops. The suggested program objectives include limited support to health and family planning activities. The proposed specific objectives outlined below address the period up to FY 1990 and focus on the following sectoral goals:

- increased production of food crops on a sustainable basis,
- more equitable distribution of income and food consumption,
- increased acceptance of family planning and
- improved health status of children and women.

The above can be assisted by focusing the AID program on the following specific objectives.

a) Strengthening Malagasy capacity and capability to plan and manage as well as to collect, process and analyze data for policy alternatives and for the design and evaluation of development programs/projects aimed at the alleviation of poverty.

b) Improved capacity of FOFIFA to conduct farming systems and on-farm agroforestry research to identify improved technologies and extension methods to effectively reach male and female farmers operating under different resource patterns, and to identify improved varieties of rice appropriate to different ecological conditions.

c) Greater accessibility to improved seeds through selected support for seed multiplication of rice, peanuts and potatoes.

d) Improved physical and managerial resources on selected private sector rice irrigation schemes farmed by smallholders

e) Increased sustainability of agricultural production through assistance to selected forestry and natural resource activities.

f) Improved accessibility in the rural areas to energy-efficient agro-processing facilities, agricultural inputs, basic medicines, and agricultural markets. Increased off-farm employment opportunities at adequate wage rates through labor intensive productive enterprises.

g) Increased accessibility to child health services through greater EPI coverage and through maternal and child health services which include family planning services.

h) Increased acceptance of family planning by the GDRM and greater access to family planning services.

The program takes into account the use of PL 480 funds, bilateral project funds, access to centrally-funded projects, and the possibility of AEPRP funds as exemplified in Table 1.

Table 1

Summary Table of Objectives and Sources of Funds

	Bilateral Projects	Local Currency	Central Projects	AEPRP
a) Data collection & analysis	X	X		
b) Farming systems, agroforestry & rice research	X	X		
c) Seed multiplication		X		
d) Irrigated rice schemes		X		
e) Forestry & natural resources	X	X	X	
f) Services, commo- dities & employment				X
g) EPI & MCH linked with FP		X		
h) Acceptance FP			X	

AID should encourage greater involvement of non-government, non-profit organizations in development activities through dialogue with the GDRM and in the availability of local currency funds to support selected, viable activities. At this time, only a few of the many indigenous NGOs are focused on development in comparison to welfare activities and have the capacity and capability to undertake development work. Ground should be laid, however, for greater AID assistance to the local NGOs within the coming years. Dialogue is necessary with the GDRM since its permission must be obtained for the NGOs to receive financial assistance from outside donors.

## Discussion of the Specific Objectives

1. Strengthened GDRM capacity and capability to plan and manage as well as to collect, process and analyze data for policy analyses and for the design and evaluation of development programs/projects aimed at alleviation of poverty.

This is an enormous and long term task. AID should continue to support efforts in the Ministry of Agricultural Production and Agrarian Reform, the General Directorate of Plan, the General Directorate of the State Data Bank, and FOFIFA. It should also support the Ministry of Animal Production and Water and Forest Resources in selected areas including training in collaboration with World Bank projects.

Within this context, AID should play a major role in helping to increase the collection and analyses of data disaggregated by sex and in encouraging the use of this information in the design of programs/projects. Assistance should be provided through short-term technical assistance for seminars and on the job training, and by supporting participation at international conferences centered on women in development and gender relations. Furthermore, AID should help ensure that women are well represented in in-country and out-of-country training financed by AID.

MARS I includes in-country training and seminars as well as short-term technical assistance to assist with data processing and analyses. The processes begun under MARS I should continue to receive AID support together with follow-on activities (including training). For example, under MARS I funds are available for training in social analysis. Because no opportunities have been identified for short-term training in the U.S., it is expected that a special course will be provided in Madagascar. The scope of this training is expected to be finalized by April 1986. Also, if necessary, MARS I funds are expected to be available for a synthesis report on land tenure systems and patterns and possibly for a seminar based on the report. The outcomes of both of these activities may call for additional assistance which should be included in any forthcoming bilateral project assistance and in use of local currency funds.

If requested, AID should continue to support the GDRM to monitor the effects of changes in economic policy upon rural and urban inhabitants, especially the poor and women. In the past AID has actively helped do so through assistance to the statistical unit in MPARA. This assistance was in the form of local currency to help in the collection of data on urban and rural food consumption patterns and in the analysis of the data.

61

AID should discuss with the statistical unit in MPARA and with FAO the feasibility of providing short-term technical assistance and computer equipment for the analysis of the sample agricultural census data according to social and economic variables. This ought to receive priority attention so as to provide a better data base on agricultural households in Madagascar. The type of analysis suggested is discussed above under Current and Proposed Research. Also, the statistical unit should be assisted as needed to carry out special surveys, particularly on soil erosion, and for training in data editing, tabulation and analysis. This assistance would supplement that from FAO and could be achieved through short term technical assistance, short-term training in the U.S. and the availability of local currency funds.

If funds are not forthcoming from either UNICEF or the Highlands Rice Project to process and analyze the nutritional survey data together with household baseline data, AID should attempt to identify funds for this task. (These data are discussed in the above section on Nutrition.) It is suggested that the best alternatives for carrying out the work would be that:

the statistical unit within the rice project do the work under the guidance of the original consultant, or

all parties concerned agree to send copies of the data to the original consultant to process, analyze and write the report.

While the strategy for achieving this objective centers on increasing the ability of the Malagasy, in specific cases, priority attention may need to be given to the end-product. This would be justified to prevent an "overload" on those charged with carrying out specific responsibilities such as data processing and analysis and when the timely presentation of the information would assist in program/project design or evaluation.

Assistance for the above activities would mainly be through bilateral project assistance. Local currency funds, though, should be available to finance selected activities and technical assistance might be provided under centrally funded projects.

62

2. Improved capacity of FOFIFA to conduct farming systems and agroforestry research and to identify appropriate, improved technologies and extension methods to reach male and female farmers operating under different resource patterns.  
Identification of improved varieties of rice appropriate to different ecological conditions.

The research begun on rice under MARS I should be continued and expanded. Also, under MARS I, AID has helped to finance short-term consultants to help increase the awareness of FOFIFA staff of the objectives of farming systems research and methodologies employed. It is anticipated that the same process will be followed with regard to agroforestry research, using a short-term consultant from ICRAF. No plans have been made, however, for a short-term consultant to help increase the awareness of the role which anthropologists/rural sociologists can play in a farming systems program, including attention to gender differences related to production. It is recommended that AID fund such a consultancy. Consideration should be given to obtaining an expert who has been on a successful multidisciplinary farming systems team, is well-versed in various approaches and examples of successful techniques, and is fluent in French. This assistance is considered extremely important given the analytical frameworks currently employed by FOFIFA social scientists.

AID should help fund both farming systems and agroforestry research through FOFIFA. It is expected that the farming systems research will center on rice production. However, it is important that key intrahousehold and suprahousehold variables are examined that relate to and effect rice production, such as the allocation of labor to different production activities, the strategies used by farmers in regards to variety of rice grown, and ability to purchase commercial agricultural inputs. The social scientists should also play a major role in the selection of trial farming households to help ensure that not only the wealthier farming households are involved.

The initial focus of the AID-funded farming systems research may be on rice production systems. But, because of soil erosion problems and the limited access to riceland and greater access to hillside land among poorer households especially in the highlands, the research should gradually be expanded to address the production systems and conditions of poorer agricultural households.

Assistance in farming systems research should be provided to the Department of Development Research, FOFIFA, through short term consultants, in fields such as agricultural economics, anthropology, and computer applications, and through the provision of local currency funds for field research and of foreign currency for computer equipment.

62

In regards to on-farm agroforestry research by FOFIFA, it is recommended that areas are selected where erosion rates are high and/or where there is a severe scarcity of wood. The research should be coordinated with a follow-on development project, implemented by a non-government, non-profit organization. The on-farm agroforestry research and project implementation ought to take into consideration socioeconomic factors, including land tenure and women's rights to trees planted for fuelwood.

Where appropriate the activities suggested above should be eligible for local currency funds and AID should draw upon centrally funded projects. Most of this endeavor should be included in bilateral projects.

3. Selected support for seed multiplication of rice, peanuts and potatoes.

AID should continue to assist to make more available improved seeds through selectively supporting seed multiplication of rice, peanuts and potatoes. Peanuts are important because of their nutritional value. Potatoes are included because of their rapidly increasing popularity among the Malagasy and their potential as an acceptable basic food to replace manioc as a substitute for rice among poorer households.

This support should come through the availability of local currency funds to support viable proposals. The requisite technical expertise must be available. While initially the seed multiplication activities are expected to be undertaken by the public sector, AID should investigate the feasibility of encouraging seed multiplication as a small to medium scale commercial private sector enterprise to facilitate greater accessibility to improved seeds in rural areas.

4. Physical and managerial improvements on selected private sector rice irrigation schemes farmed by smallholders.

AID should continue to support requests for local currency funds for improvements on selected small rice irrigation schemes but only those in which the land is owned and cultivated by smallholders. In addition, AID should consider requests for local currency assistance related to the establishment of water user committees. For example, the process of establishment of such committees may require more training of regional supervisors and assistance in monitoring the committees to provide feedback on further required

assistance. Also, local currency funds should be available to support the socioeconomic and technical survey of smallscale private sector rice schemes, under the direction of a World Bank technical assistant. However, approval of local currency support should be contingent on a few modifications of the questionnaire that will provide better information on social variables including gender issues.

5. Increased sustainability of agricultural production through assistance to selected forestry and natural resource activities.

See the REDSO/ESA CDSS update on energy and natural resources for suggested activities, strategies and sources of funding.

AID should also consider local currency support for the collection of indigenous plants when tied to the collection and analysis of data on adjacent human populations which has a development focus. This is considered essential because protection of indigenous plant species will only be secured when the socioeconomic causes for destruction of indigenous plant materials are adequately understood and addressed.

6. Improved accessibility in the rural areas to energy-efficient agro-processing facilities, agricultural inputs, basic medicines, and agricultural markets. Increase off-farm employment opportunities provided at adequate wage rates through labor intensive productive enterprises.

This specific objective should be achieved through support to private sector enterprises in rural areas. It might take the form of (a) loan funds available through local banks, (b) commodity imports for local purchase, or (c) short-term technical assistance. In particular, the work launched in Madagascar under the Energy Initiatives for Africa sub-project on mini-hydropower for agroprocessing should be continued as indirect assistance to rural women.

7. Increased availability of child health care services through greater EPI coverage and through maternal and child health care services which include family planning services.

Local currency funds should be available for viable proposals that expand and improve the EPI coverage, in collaboration with UNICEF assisted activities. In addition, local currency funds might be made available to support activities under the proposed GDRM/UNFPA maternal and child health care project which includes provision of family planning services. AID should only approve requests for financial assistance when directly related to health centers which provide family planning services. The activities under this objective should be chosen on their soundness and the feasibility of managerial support through the on-going programs of other donors.

8. Increased acceptance of family planning by the GDRM and greater coverage of family planning services.

The population strategy should aim at encouraging a favorable GDRM policy towards family planning together with stimulating a greater demand for assistance in the area of family planning. These two objectives are considered as mutually reinforcing. It is considered prudent for AID to proceed with sensitivity to the political and social context so as to develop a sound climate for family planning services in Madagascar. The strategy ought to consist of (a) increasing the awareness of policy makers to the implications of rapid population growth to attainment of Madagascars stated development goals, (b) improving the availability of demographic data to support (a), and (c) strengthening the family health services delivery in public and private sectors through training and provision of needed medical supplies and equipment for family planning services. The family planning objective should be addressed through centrally-funded projects.

Of immediate importance is assistance to the State Data Bank for planning the forthcoming population census.

LIST OF SELECTED DOCUMENTS

- Bess, Mike. A Preliminary Profile of Rice Processing in Madagascar. Energy Initiatives for Africa Project. August 1985.
- CRS. Food and Nutrition Program Report for Madagascar. August 15, 1985.
- Clay, Daniel and Mary Friday. Assessment Report on Institutional Capabilities in Statistics. BUCEN. February 1985.
- Ferguson-Bisson, Darlene, Jean LeComte, Barbara Kennedy. Madagascar: Population and Family Health Assessment, May 13-31, 1985. Report for AID.
- Gardenier, William. Witchcraft and Sorcery in a Pastoral Society: The Central Sakalava of West Madagascar. Ph. D. dissertation. Rice University, 1976.
- Gozo, K. M. Le secteur non structure d'Antananarivo. Addis Abeba: Bureau international du travail, 1985.
- GRDM. Recensement 1975: Analyse des donees demographiques. INSRE.
- . Recensement 1975: Les Menages. INSRE.
- Huntington, William. Religion and Social Organization of the Bara People of Madagascar. Ph. D. dissertation. Duke University, 1973.
- Kottak, Conrad. The Past in the Present. Ann Arbor: University of Michigan Press, 1980.
- International Advisory Company, Ltd. Madagascar: Report on the Antsirabe Nutrition Survey, Seminar, and Follow-up Action. December 1984.
- MPARA. Assistance technique au MPARA pour le projet de rehabilitation des petits perimetre irriques; Rapport interimaire. Decembre, 1985.
- Phillips, Lucie Colvin. Land Tenure Issues in River Basin Development: The Sudan and Madagascar. Report for AID. draft February 1985.
- Plotkin, Mark et. al. Ethnobotancy in Madagascar. Report on Conservation Priorities to IUCN/WWF. n. d. (1985).
- 61

Rafrezy, Andrianarivelo and Randretsa Iarivony. Population de Madagascar: Situation actuelle et perspectives d'avenir. GRDM: Janvier 1985.

Raison, Jean-Pierre. Les hautes terres de Madagascar et leurs confins occidentaux. Bondy: OSTRUM, 1984.

Rakotonirainy, Germain et. al., La dynamique des structures foncieres sur les Hautes terre mlgaches. Rapport pour FAO. Mars/Juillet 1984.

Ramakavelo, M.P. et. al. A Propos de La Plannification Familiale a Madagascar. Ministere de la Sante. 1983.

Ramanitrera, Cecile. La femme dans la production vivriere et la securite alimentaire. Mimeographed report. n. d. (1984)

Randriananivo, Desire et. al. Les donnees agro-socio-economiques de la culture et de la production de la pomme de terre dans le Vakinankaratra: Rapport de Synthese. Departement Recherche-Developpement, FOFIA, Juillet 1985.

Diagnostic socio-economique du moyen-Ouest (Zone Abkadinondry-Mahasolo). Division Economie et Sociologie Rurales, FOFIFA, Juillet 1984.

Tun, Sovan. Analytical Performance and Capabilities of Malagasy Institutions in the Agricultural Sector. USDA. n.d. (1985)

UNFPA. Manuel de controleur pour la formation des enqueteurs. Projet: Education en Matiere de population a Madagascar. n.d.

UNICEF. Situation Analysis of the Child in Madagascar. November 1984.

USAID. Project Evaluation Summary: Malagasy Rice Research Project. November 15, 1985.

USAID. Energy and Natural Resources: CDSS Update. December 1985.

World Bank. Madagascar Export Crops Sub-sector Review. December 28, 1984.

Madagascar Irrigation Rehabilitation Project Staff Appraisal Report. April 3, 1985.

Madagascar Lac Alaotra Rice Intensification Project Staff Appraisal Report. February 25, 1983.

Zalla, Tom. Data Analysis Capabilities within the Agricultural Sector of Madagascar. USDA. March 13, 1985.

NA 11 4-5  
10A - 10:00

ENERGY/NATURAL RESOURCE SUB-SECTOR  
STRATEGY UP-DATE

February 1986

Prepared by:

James R. Seyler, RFA  
C. Anthony Pryor, REA  
John G. Gaudet, REO  
Carolyn Barnes, Social Analyst

11

## INDEX

### 1.0 BACKGROUND: ENERGY/NATURAL RESOURCES IN THE AGRICULTURAL CONTEXT

1.1 Agriculture's Role in Madagascar's Economy

1.2 Key Constraints in the Agriculture Sector

1.3 GDRM's Progress in Agricultural Reform

### 2.0 THE ROLE OF THE ENERGY, FORESTRY, ENVIRONMENT AND NATURAL RESOURCE SUB-SECTORS IN AGRICULTURAL PRODUCTION AND REHABILITATION

2.1 Natural Resource Influences

2.1.1 Influences on Biological Diversity

2.2 Energy Influences

2.2.1 The Woodfuels Crisis

2.2.2 Energy Use in Agriculture

2.3 GDRM's Interest in the Energy/Natural Resource Sub-sector

### 3.0 THE CURRENT AID/MADAGASCAR STRATEGY: AN INTEGRATED APPROACH TO AGRICULTURE DEVELOPMENT

3.1 Rationale

3.2 Relationship to Current CDSS

3.3 The Energy/Natural Resource (E/NR) Pre-assessment

3.4.1 Summary Findings

3.4.1.1 The Energy, Forestry and Natural Resource Sectors

3.4.1.2 E/NR Sub-sector Institutional Issues

### 3.5 Accomplishments Under the Current CDSS

#### 3.5.1 Information

#### 3.5.2 Training

3.5.2.1 The International Council for Research in Agroforestry's (ICRAF) Training Course in Agroforestry Research for Development

3.5.2.2 Regional Remote Sensing Facility Training/Nairobi

3.5.2.3 ST/FENR's Forest Administration and Management Course

#### 3.5.3 Pilot Activities

3.5.3.1 Hydropower for Agro-processing in Madagascar

#### 3.5.4 Assessments

3.5.4.1 Agro-processing

3.5.4.2 Decentralized Power to Serve Human Needs

3.5.4.3 Institutional Capabilities in Statistics

### 4.0 FY '87 STRATEGY UPDATE: AN INTEGRATED APPROACH TO AGRICULTURAL DEVELOPMENT AND PRIVATIZATION

#### 4.1 Summary

#### 4.2 Proposed Activities

4.2.1 Information Exchange/Networking

4.2.2 Short Term Training

4.2.3 Short Term Technical Assistance/Assessments

4.2.3.1 Carbonisation of Pine Smallwood  
Feasibility Study

4.2.3.2 Natural Resources Inventory

4.2.3.3 Agro-processing/Ampefy

4.2.3.4 National Assessment of  
Agro-processing and the Role of Parastatals

4.2.3.5 Internal Assessments

4.2.4 Workshops

4.2.4.1 "Agroforestry Awareness" Workshop

4.2.4.2 "Strengthening Forestry Research in  
Madagascar" Workshop

4.2.5 Use of Local Currency

4.2.5.1 Support to World Wildlife Fund/USA

4.2.5.2 Support to GDRM/Swiss Development  
Corporation Efforts in Natural Forest  
Management and Soil Conservation

4.2.5.3 Support to PVOs

4.2.5.4 Support to FOFIFA/Agroforestry  
Research

4.2.5.5 Hydro-mechanical Power for  
Agro-processing

4.2.5.6 Other Possible Local Currency  
Activities

## ENERGY/NATURAL RESOURCE SUB-SECTOR UPDATE

### 1.0 BACKGROUND: ENERGY/NATURAL RESOURCES IN THE AGRICULTURAL CONTEXT

#### 1.1 Agriculture's Role in Madagascar's Economy

Agriculture is the dominant sector of the Malagasy economy: it employs 85% of the population, accounts for 80% of export earnings, and contributes about 40% of gross domestic product. Over the last five to six years, agricultural production has fluctuated widely but the overall trend has been static, in contrast to the strong upward growth trend of the 1960s and early 1970s.

As a result, production has increased more slowly than the rate of population growth. The impact on Madagascar's balance of payments has been particularly serious; food imports have become a heavy and increasing burden on foreign exchange reserves, while export earnings have fluctuated widely. In short, the agricultural sector is not currently playing the dynamic role which it could and should.

#### 1.2 Key Constraints in the Agriculture Sector

The World Bank's Agriculture Sector Memorandum of June 30, 1983 summarizes the key economic, institutional and technical issues facing the development of Madagascar's agriculture sector. Briefly, they are:

- o Pricing and marketing policy: Government controls over prices and marketing of key agricultural commodities have introduced many distortions and contributed to declining production and supply problems;
- o Production related services: Key farmer services are weak and declining in effectiveness; these include veterinary services, irrigation management, research, extension, credit, input supply, and the forestry service. Organization and management of financial and material resources have been weak. Research is virtually at a standstill. In addition, the deterioration of producer-related infrastructure (roads, the transport fleet, agro-processing facilities, irrigation works) has had serious repercussions for production;

27

- o Resource allocation and management: Public sector investment in agriculture expanded in the late 1970s, yet the productivity of investments is poor, primarily because public sector resource management is weak at every level including planning, programming, budgeting, accounting, monitoring and evaluation. Basic aspects of financial management such as cost recovery have been largely neglected. Sector managers were ill-prepared to handle the stringent cutbacks in resources allocated to the sector from 1981 on and, as a result, priority projects and services are inadequately financed;
- o Sector institutions: Many problems stem from the weakness of the institutions involved. Both, in the Ministries primarily concerned (the Ministry of Agriculture-MPARA, and the Ministry of Forestry and Livestock-MPAEF), and the 90 plus agricultural parastatals, there are problems of organization and structure, training, personnel management and materials which greatly reduce the effectiveness of the institutions concerned.
- o Environmental degradation: It is estimated that as much as one million hectares per year are lost to productive agriculture in Madagascar through soil erosion. In the past, GDRM measures to control erosion and its underlying causes (overgrazing, uncontrolled bush fires, clearing for agriculture and fuelwood collection) have been ineffective tending to focus on unenforceable administrative regulations, publicity and some "curative" measures such as firefighting squads and communal afforestation programs. For the most part, measures to address soil erosion problems were not included in GDRM's land use planning and agriculture extension efforts where the key to long term sustainable agricultural productivity rests.

### 1.3 GDRM's Progress to Date in Agricultural Reform

In order to address the above issues, the GDRM has been acting along new agricultural policy lines giving grounds for some optimism about the future. The World Bank, in its Forestry III draft appraisal report, cites the following:

"In 1982, under the leadership of a new Minister, the agriculture ministry began to tackle the most flagrant problems it faced. Over the last three years, slow but solid progress has been achieved. On pricing and marketing, rice and beef have been substantially deregulated; significant increases in prices and improvements in price setting mechanisms have been

made for cotton. Major studies on rice and export crops, designed to provide the basis for further decisions on pricing and marketing issues, have been recently completed and action plans are being elaborated.

On production services, input supplies have been improved, veterinary services have been decentralized, and a pilot effort to revitalize extension services is underway.

On resource allocation and management, departments responsible for finance and administration have been established in the ministries, and a thorough appraisal of the investment program has been done, leading to a combing out of non-priority and non-viable projects.

On sector institutions, the Ministry of Agriculture was reorganized in 1983 to regroup the disastrous, ill-planned decentralization of 1979, thus enabling the Ministry to start on a series of ambitious institution building efforts. Unfortunately, the ministry was divided in two in 1983, and a new ministry of livestock and forestry (MPAEF) created. This has resulted in some teething problems but the new ministries are now settling down and are carrying out some self-appraisal. For example, MPARA's payroll was reduced by 3,000 surplus ministry employees, consultant reviews of ministry structures were carried out and are to be implemented; a preliminary review of training needs has been undertaken and the IDA report on parastatal issues has been discussed and its major recommendations accepted.

Implementation of some management audits and of rehabilitation and rationalization proposals is underway, and some management contracts have been signed with private firms; ISNAR has completed a study on agricultural research which includes recommendations for improved management and organization, and a good start has been made on implementation."

## 2.0 THE ROLE OF THE ENERGY/NATURAL RESOURCE SUB-SECTOR IN AGRICULTURAL PRODUCTION AND REHABILITATION

From the above, it is obvious that traditional agriculture production issues in Madagascar are slowly beginning to sort themselves out. As a result, many Malagasy planners and technicians are starting to turn their attention to agriculture's companion sectors of forestry, energy, natural resources and the environment. While rarely cited explicitly as a priority objective in past strategy statements, energy/natural resource contributions to increasing agricultural production while maintaining environmental stability and biological diversity, have recently emerged as a keen concern to the Malagasy Government.

## 2.1 Natural Resource Influences

The need for increased attention to soil conservation is a prime example. Madagascar has one of the highest erosion rates in the world, due primarily to uncontrolled clearing for agriculture and fuelwood production and/or uncontrolled bush fires combined with overgrazing. As previously stated, it is thought that over one million hectares of arable land are lost annually through soil erosion and resulting declines in soil fertility/cation exchange capacity.<sup>1/</sup> At one research site (Ambatolampy), Malagasy scientists estimated that 262 tons of soil are lost each year due to erosion.<sup>2/</sup> As 80% of Madagascar's land base is thought to be subjected to one form of erosion or another, the amount of soil lost each year is staggering. Gully formation has been rampant in the country's highly erodible soils and has resulted in immediate needs such as rehabilitation of areas adjacent to major roads; an extremely costly and difficult operation to carry out.

In addition to the loss of valuable land and soil resources, the impact of this high rate of erosion on agricultural productivity "downstream" can be considerable. The Lac Alaotra region, Madagascar's premier rice production scheme, annually loses up to 3000 hectares of rice paddy due to siltation and sand deposition resulting from erosion within the lake's watershed.<sup>3/</sup> This is often more than the total of new paddy brought into production in the scheme in any one year. Silt deposition in the country's canals has led to decreased water availability in the irrigated rice schemes, favors aquatic weed growth and requires large recurrent expenditures in terms of canal maintenance. Rice is not the only crop affected. Manioc production has decreased from 10 tons per hectare to a current level of 5-6 tons per hectare because of nutrient loss through erosion and leaching.<sup>4/</sup>

Madagascar's extensive shifting agriculture or "tavy", is also being called into question by many Malagasy authorities. Shifting agriculture, for upland rice production, and for corn, as a result of recent GDRM promotion, accounts for the loss of 200,000 hectares of forest cover each year in some of the country's most important watersheds.<sup>5/</sup>

---

<sup>1/</sup> The World Bank, "Madagascar Agriculture Sector Memorandum", 1983, Washington, D.C.

<sup>2/</sup> Repoblika Demokratika Malagasy, Commission Nationale de Conservation pour le Developpement Durable, Rapport de la Sous Commission I, "Erosion, Conservation des Eaux et des Sols, Politique de l'Arbre", 1985, Antananarivo

<sup>3/</sup> Ibid.

<sup>4/</sup> Ibid.

<sup>5/</sup> Ibid.

While this practice was acceptable when population levels were lower and fallow periods longer, increased population pressure in certain areas has reduced fallow periods to the extent that rice yields are now less than 300 kg/ha compared with 800 kg/ha on virgin sites and 3-4 tons/ha on irrigated sites.<sup>6/</sup> Moreover, continued farming in these degraded areas without following prescribed rotations and fallow periods allowing for nutrient recycling, can eventually render these areas completely sterile.

Malagasy officials are therefore beginning to question the acceptability of these yields/practices given the large increases in socio-economic and financial costs resulting from environmental instability.

#### 2.1.1 Influences on Biological Diversity

While the decline in agricultural productivity resulting from natural resource deterioration is problem enough, Madagascar's situation is even more bleak when it is combined with a concurrent loss in biological diversity as the country is now experiencing. The World Wildlife Fund, in their Madagascar briefing paper, reports the following:

"Madagascar has been separated from the African mainland for perhaps as long as 180 million years, and has evolved in isolation for at least 30-40 million years. As a result, Madagascar's spectacular flora and fauna is a unique evolutionary experiment, unlike that found anywhere else in the world and possessing what are probably the highest levels of species endemism of any country. As examples, 93% of Madagascar's 40 lemur species and sub-species, 81% of its flowering plant species, 95-99% of its reptiles and 148 out 150 of its frogs are endemic, and this endemism extends to the generic and even family levels in many cases. Owing to its unusual climate, Madagascar also has a wide variety of ecosystems, ranging from the spectacular spiny deserts in the south to dry deciduous forests in the west to moist tropical rain forests on the eastern escarpment, each with its own fauna and flora and each facing a wide variety of threats.

More importantly, because of the great variety of species and ecosystems and the very limited extent of many forest formations, the destruction of a few hundred hectares in Madagascar can have a much more devastating effect on species diversity than in most other parts of the world. Indeed, one need only look at what has already been lost in Madagascar to realize what could very well happen in the future.

---

<sup>6/</sup> Ibid.

People arrived on the island 1,500-2,000 years ago, and over the next thousand years succeeded in wiping out all of the elephant birds, at least two species of giant tortoise, a pygmy hippo, an aardvark and at least seven genera of lemurs, all of them larger than the living lemur species and including one that grew to be as large as a female gorilla.

The factors that brought about these extinctions are still in operation, and could very well result in the loss of one of the most spectacular natural wonders of our planet before the turn of the century."

## 2.2 Energy Influences

### 2.2.1 The woodfuels crisis

An already serious problem is further compounded by the fact that Madagascar, like so many other countries, is facing a woodfuels crisis. Clearing for agriculture and cutting down forest resources to supply fuel needs are depleting forests faster than they are being replenished. While the woodfuels problem requires additional analysis, it is thought that indiscriminate and uncontrolled cutting of trees by commercial operators and farmers and wastage of wood through inefficient charcoal making are major contributors to this net loss. Widespread brush fires set to improve late dry season forage also impede natural regeneration. Likewise, too little of the forest areas cleared for tavy are harvested for woodfuels before burning.

Madagascar's woodfuels crisis is particularly acute for larger towns which are supplied primarily with charcoal coming from distant areas to reach markets. Although the quantitative dimensions of the rural fuelwood problem remain to be defined, there is ample evidence that fuelwood collection is a substantial burden to the peasant household, decreasing the amount of time available for more productive activities.

### 2.2.2 Energy use in Agriculture

The lack of power to drive agro-processing equipment is currently restricting growth in agricultural commodity conversion and processing. The response by farmers to positive changes in macro-economic policy has been dampened by the deterioration of the transport sector and the problem smaller decentralized private mills and oil presses face in obtaining fuel and spare parts.

One dominant factor affecting the revitalization of these decentralized private milling operations is the availability of relatively low cost power systems that do not rely on imported fuels.

Rice milling is a prime example. With the exception of imported rice, all rice consumed in Madagascar is processed either by hand or in "large" and "small" mills. "Large" rice mills, with capacities ranging from 8-20,000 metric tons per year are found in the major cities of Madagascar and in the Lac Alaotra areas, a large surplus rice producing region. A "small" mill is defined as a rice decorticator with a capacity of less than 8 tons of paddy per day, or less than 2,100 tons per year (assuming 260 days of operation per year).

Mechanical rice milling capacity in the rural areas of Antananarivo Province is rapidly expanding. However, growth is being suppressed by lack of equipment (motors, machinery and spares), difficulties in obtaining fuel, and a very tight rural capital/credit market.

However, there are still several issues that need to be resolved, particularly: if cheaper, more easily accessible and serviceable inputs were available to these rural investors, would this trend towards rural rice processing accelerate? And to what extent does the unavailability of local processing facilities pose a constraint on the actual production of rice and other agricultural products?

### 2.3 GDRM's Interest in the Energy/Natural Resource Sub-sector

GDRM's concern over natural resource deterioration has been most recently expressed in the form of the "International Conference on the Conservation of Natural Resources for Development in Madagascar". Held in Antananarivo in November 1985 under the sponsorship of the GDRM (MPARA and MPAEF) and the World Wildlife Fund, the conference brought together international and Malagasy experts to discuss natural resource issues, including their interactions, and to develop action plans to address the country's major natural resource related problems.

The conference was organized according to four major themes: (1) erosion control, soil and water conservation and tree politics; (2) continental resources including forests, pastures and protected areas/reserves; (3) coastal and inland water resources; and (4) education, training, extension and information issues.

While the formal recommendations and action plans resulting from this conference are not available at the time of writing of this report, two common concerns emerged from conference discussions:

- o The need for more quantitative information on the state of Madagascar's natural resources, including

their extent, degree of deterioration and relationships with maintaining or increasing agricultural productivity information deemed necessary by all conference participants for purposes of improved planning and decision making; and,

- o The need for a more integrated, multi-disciplinary and bottom-up approach in addressing Madagascar's conflicting land use problems.

With regard to energy inputs to agriculture (both direct and indirect), the Ministry of Industry, Energy and Mines (MIEM) is taking the lead in exploring improved agricultural processing methods and improved stoves as a means of increasing agricultural productivity and conserving the natural resource base.

Agricultural processing, primarily the milling of rice, is now being accomplished in many places by using small mills powered by diesel generators or motors. Rural inhabitants realize substantial savings by employing these small decentralized systems but the foreign exchange costs to Madagascar are high and the dependability of the systems is problematic. Spare parts are often difficult to obtain due to distribution problems and lack of foreign exchange. As rice production is the most important economic activity in Madagascar, MIEM is exploring the use of hydro-mechanical or shaft power as a cheap, reliable and locally available means of driving milling equipment, thereby improving production and providing the rural Malagasy with more value added for that production.

Hery Vao, MIEM's renewable energy resources group, is currently developing an intensive improved charcoal stoves strategy. This strategy will focus initially on a needs analysis examining the artisanal sector, marketing constraints, cooking habits and socio-economic analyses, followed by a program of design, testing and dissemination.

### 3.0 AID/MADAGASCAR'S CURRENT STRATEGY: AN INTEGRATED APPROACH TO AGRICULTURE DEVELOPMENT

#### 3.1 Rationale

AID/Madagascar's current CDSS reflects the above GDRM interests and concerns; we believe that the interactions between the agricultural sector and the component sectors of forestry, energy, and natural resources need to be addressed if Madagascar is to achieve sustainable development. As Madagascar's human and livestock populations increase, greater and conflicting demands are being placed on a constant land

base. These pressures thus increasingly dictate that food, fodder, wood and other goods be produced from the same land.

In this context, the promotion of agricultural or other sectoral development against a background of natural resource degradation appears to us to be inviting failure.

### 3.2 Relationship to current CDSS

The 1986 Country Development Strategy Statement (CDSS); agreed to by USAID and the Government of Madagascar, emphasizes agriculture. The CDSS also stresses the need to continue to gather data and information in certain other areas and sectors that directly affect agricultural productivity. In particular, the CDSS suggested that a pre-assessment be undertaken to determine the role of energy, forestry and natural resources in sustaining agricultural production, test out a few small interventions, and identify areas suitable for further activity.

### 3.3 The Energy/Natural Resource (E/NR) Pre-assessment

To begin the above process, the Regional Economic Development Services Office of AID (REDSO/ESA) assembled a technical team to carry out an initial reconnaissance in July/August 1984.

The team undertook the following activities:

- o A general overall assessment of the energy/natural resource sub-sector, concentrating on the level of knowledge and information available in the sub-sector.
- o A preliminary assessment of institutional data and training capabilities in the forestry, renewable energy, and environment sectors, focussing on institutional and training constraints.
- o A review of relevant on-going GDRM projects.

### 3.4 E/NR Pre-assessment Summary Findings:

#### 3.4.1 The Energy, Forestry and Natural Resource Sub-Sector

Despite the short duration of the initial visit, the team was able to identify and collect a significant amount of information on the forestry, energy and natural resource sectors in Madagascar. Field trips were necessarily limited to the plateau region around Antananarivo and unfortunately, little first-hand information or data concerning differences between agro-ecological zones was obtained.

However, a reasonably good sense of the availability of information in these sectors and across ecological zones was obtained through in-depth discussions with relevant GDRM ministries, the University and other groups in Antananarivo.

The information gathered does not contradict the assessment in the World Bank's Agriculture Sector Memorandum (June 30, 1983), which identified the serious deterioration of the country's natural resource base as being a significant factor contributing to the decline of Madagascar's agricultural productivity.

The team concluded that the interactions between agriculture, range, forestry, rural energy, environment, land tenure and other socio-economic considerations appear to be far more complex than our CDSS or the World Bank's memorandum would suggest. While strategies for improvement exist, it seems inconceivable that agricultural productivity, rural income and food self-sufficiency can be augmented without addressing the interactions between potentially conflicting uses of the natural resource base. The team also emphasized the need to begin exploring these action areas now. Increasing population pressure over much of the country circumvents the more expensive rehabilitation costs that continued large-scale environmental destruction holds for future generations.

#### 3.4.2 E/NR Sub-sector Institutional Issues

Unlike many other developing countries, Madagascar does have a technical base from which to address the energy/natural resource sector. Furthermore, unlike most other countries, trained personnel generally have not left for more lucrative posts overseas. Although most technical people prefer the private sector as is expected, the basic infrastructure is still intact.

However, severe constraints impair the ability of this human resource potential to be fully utilized. Some problems are endemic to the country at large: lack of maintenance, transport, and operating budgets. Also, while the technical infrastructure is good, it is deteriorating and has not changed to keep up with recent advances in technical fields. Data gathering is presently at a minimum and analytical capacity is severely limited.

The capability to extend technologies is also constrained. Not only have the formal training and extension services eroded over the last decade but it is unclear whether their strengthening alone would be sufficient to promote needed increases in agricultural production. Less costly, more innovative approaches may now be needed, including

participatory extension or outreach programs (such as used in the innovative Swiss/Malagasy Agroforestry Project now underway).

The energy/natural resource sub-sector appears to be more seriously affected by budget constraints than other sectors; available extension and research funds are often directed into research and development of commercial activities. Many of those interviewed expressed concern that the productive base will not be sustained unless serious attention is paid to the efficient management of energy and natural resources.

The complete findings of the REDSO/ESA's Energy/Natural Resource Pre-assessment are found in Annex I.

### 3.5 E/NR Accomplishments Under the Current CDSS

The FY 1986 CDSS identified energy and natural resources as one of four priority areas requiring more data and analysis. In addition, training and technical assistance was called for in the identification and analysis of key problems and policy alternatives affecting the agricultural sector.

This CDSS also identified technical assistance and training required to improve GDRM management in the energy/natural resource sub-sector.

The Annex to the FY 86 CDSS included a chapter on the energy and natural resource sectors, and listed a series of specific recommendations, including the implementation of pilot activities through centrally-funded projects such as Energy Initiatives for Africa.

Despite the presence of only one USDH Officer at post and the initial problems inherent in opening a new AID Office, AID/Madagascar has made considerable progress in implementing a number of recommendations resulting from the E/NR assessment and current Strategy. More importantly, activities undertaken have laid the groundwork for Madagascar to take a more integrated approach to agriculture sector development. Specific accomplishments include:

#### 3.5.1 Information

With the assistance of REDSO, ST/FENR's Forestry Support Program and USDA's Information Service, a number of literature reviews have been conducted and up-to-date documents/information have been furnished to relevant GDRM institutions on a wide variety of subjects ranging from

agroforestry and genetic improvement of multi-purpose trees to small scale charcoal briquetting technology and modular agriculture education systems.

### 3.5.2 Training

AID/M, using PD&S, central and project funds, has sponsored participants in a number of short term training courses directly related to development of an integrated agricultural strategy. These are:

#### 3.5.2.1 The International Council for Research in Agroforestry's (ICRAF) Training Course in Agroforestry Research for Development

This course is intended to enhance the professional capabilities of research scientists and development planners from developing countries for initiating and implementing agroforestry research leading to the development of systems and technologies that are both suitable to local conditions and adaptable by local farmers.

Given Madagascar's increasing population, declining soil fertility, rampant soil erosion on the hillsides and rice paddy siltation, uncontrolled exploitation of forest resources coupled with a lack of cash reserves and inadequate infrastructure among Malagasy farmers, AID/M believes that agroforestry or farm forestry will be one of the keys to successful agricultural development on the island. In order for Malagasy researchers and planners to be more cognizant of land use problems and perhaps shift emphasis from commercially oriented production research issues, AID/M has sponsored three participants to this yearly course to date: one tree breeder and one silviculturalist from FOFIFA/Forestry Research and one agronomist from FOFIFA/Agriculture Research.

#### 3.5.2.2 Regional Remote Sensing Facility Training/Nairobi

Considerable interest has been expressed by the GDRM in the use of remote sensing technology for resource assessments, inventories, etc. FTM (Institut National de Geodesie et Cartographie) has submitted a proposal to the Regional Remote Sensing Facility in Nairobi for a pilot vegetation mapping study in the Morondava Region.

This pilot project was designed by FTM in order to ascertain whether remote sensing imagery could be used to up-date the 1965 1:500,000 mapping series as regards vegetation and land use. The final production is intended to be a 1:500,000 map with routine topographic features from 1965 but an up-date of the area of vegetation types as categorized by:

humid tropical forest; dry tropical forest; thorn forest; mangrove forest; savannah and savannah woodlands; rice paddy and other agriculture.

While AID/M considered FTM's proposal an important beginning in direction of an inventory of natural resources, AID/M and REDSO/ESA considered it to be basically a mapping exercise, falling short in addressing issues such as trend analysis, forest inventory techniques, land use practices, etc. For these reasons, AID/M with assistance from REDSO/ESA suggested to GDRM that a multidisciplinary, inter-agency team be assembled for training in remote sensing technology at the Facility in Nairobi.

GDRM agreed to this approach and a five person team representing scientists and technicians from MPARA, FTM, MPAEF and the University attended a training course in remote sensing applications in agriculture and natural resource statistics and inventory techniques, at the Remote Sensing Facility in Nairobi.

#### 3.5.2.3 S&T/FENR's Forest Administration and Management Course

AID/M, through the assistance of ST/FENR's Forestry Support Program, sponsored the participation of the then acting director of GDRM's Forest Service (now, an advisor to the Minister, MPAEF). The purpose of this course is to provide senior level LDC forestry officials with a working knowledge of new developments in public and private forest administration and management.

#### 3.5.3 Pilot Activities

##### 3.5.3.1 Hydropower for Agro-processing in Madagascar:

AID/M and the GDRM through MIEM are funding a small hydropower for agro-processing project in the village of Ampefy in Western Antananarivo Province. The purpose of the project is to put in place a facility for mechanically processing agricultural products using locally fabricated power equipment. The objectives of the project are to:

- o Put in place a pilot hydropower facility that will demonstrate Madagascar's ability to fabricate essential machinery for power generation and its ability to harness local energy resources;
- o Attempt to quantify the potential for increasing rural incomes and for releasing pressures on the country's overburdened transport infrastructure.

- o Improve Malagasy capabilities to identify potential sites for small-scale hydro-mechanical generation and to determine the demand and potential for developing alternative energy sources, including the eventual exploitation of such sources for agricultural processing; .
- o Establish the industrial and technological base for fabricating the machinery necessary for harnessing hydro power; and
- o Build up the country's capabilities to develop hydro sites and service and maintain hydropower installations.

#### 3.5.4 Assessments

In addition to the Energy/Natural Resource Assessment, a number of other assessments were undertaken in order to further fill information gaps regarding agriculture productivity in the CDSS. These are:

##### 3.5.4.1 Agro-processing

The Hydropower for Agro-processing Project was based on assumptions that opportunities for rural investment in processing facilities are currently growing at a rapid pace due to: (a) GDRM's recent liberalization of agricultural (primarily rice) pricing policies, (b) the GDRM's near total withdrawal from collecting and marketing many agricultural products (primarily rice), and (c) the severe deterioration of the nation's transport infrastructure that is retarding the movement of agricultural goods to central processing facilities.

However, these assumptions are made on a relatively limited data base and have not been subjected to rigorous analysis. Very little attention has been paid to issues concerning what happens between points of production and points of consumption, and how these interim steps affect both production and consumption.

Therefore, the Hydropower Project was designed to test these assumptions in the project area by including a series of studies on local dynamics of rural investment, the linkages between agricultural production and processing, and the structure of Madagascar's intermediate agriculture sector. The first of these studies entitled "A Preliminary Profile of Rice Processing in Madagascar" was carried out by the Energy Initiatives for Africa Project in order to provide guidance and a framework for future work on the subject. Additional studies are now being completed by Malagasy from various agencies under supervision by AID/M.

#### 3.5.4.2 Decentralized Power to Serve Rural Needs:

AID/M, with assistance from ST/EY and the National Rural Electric Cooperative Association, (NRECA) is currently undertaking an assessment of the potential for hydro power development in Rural Madagascar. The study is intended to provide GDRM with a clear picture of the investment opportunity for decentralized hydropower for presentation to international financial institutions.

When completed, this study will provide general information on the power sector in Madagascar, including tariffs, institutional settings, and a review of hydropower studies previously conducted. NRECA's final report will present the prefeasibility-level analysis and will examine the energy demand, supply and market opportunities for decentralized hydropower with recommendations on whether to proceed with the feasibility stage. If warranted, feasibility studies of representative hydropower sites and possibly complementary projects will be performed to provide more detailed technical and overall implementation design as a basis for investment decisions by lenders. Subsequent stages include NRECA assistance to GDRM in securing financial commitment from donor agencies, and monitoring and evaluating projects to feed lessons on new experience back into the program assessment and formulation process. In particular, NRECA is assisting the World Bank to incorporate the recommendation of this study into the Bank's Energy I project.

#### 3.5.4.3 Institutional Capabilities in Statistics

The purpose of this assessment, which was carried out by the Bureau of Census and the U.S. Department of Agriculture, was to provide AID/M with a broad understanding of the statistical capabilities of various institutions in GDRM (MPARA, MPAEF, FOFIFA, INSRE) involved in the agriculture sector. AID/M believes that clear knowledge of such statistical capabilities is essential to Mission interest in developing a program designed to assist the GDRM in strengthening its statistical operations. In turn, a solid statistical base is requisite to effective development planning. A special effort was also made to evaluate potential sites for microcomputer installations as well as specific existing applications which could be developed at these sites. The report also contained a set of recommendations as to how AID/M might consider reinforcing current resources and statistical activities of selected GDRM institutions. These recommendations have been instrumental to AID/M and other donors in developing strategy and bilateral programs and projects.

#### 4.0 FY '87 STRATEGY UPDATE: AN INTEGRATED APPROACH TO AGRICULTURAL DEVELOPMENT AND PRIVATIZATION

##### 4.1 Summary

It is increasingly evident to GDRM and AID/M that sustainable agriculture and hence rural development in Madagascar will depend on long term environmental stability. Soil and water conservation achievable through forestry and tree planting as well as careful evaluation of renewable energy supply and demand options will ultimately be required to halt the degradation associated with inadequate land use choices such as uncontrolled fuelwood and charcoal harvesting and shifting agriculture. AID/M intends to promote activities and concepts which demonstrate natural resource's contributions to maintaining or increasing agricultural productivity and environmental stability where appropriate.

It is expected that the power component of the energy/natural resource portfolio will be gradually integrated into a series of activities and policy analyses related to agricultural processing. AID/M plans to continue work on decentralized power systems for agricultural processing and proposes to examine the potential for locally manufactured agro-processing equipment. REDSO/AID has been examining the potential for promoting the revitalization of agricultural processing in the country, and has carried out several assessments as well as one pilot activity which tests the potential for locally constructed hydropower turbines for use in rice milling. A major assessment of agro-processing on the island is also proposed.

As the CDSS process begins to emphasize the saving of foreign exchange, the promotion of FX earning activities and an increased emphasis on private sector initiatives, previous work undertaken over the last two and a half years by AID/M in the E/NR sub-sector indicates the following opportunities:

- o Promotion of indigenous fuel sources for local industries, including the cement plants, through the carbonization of thinnings from the Fanalamanga Pine Plantations;
- o Construction of micro-hydro schemes designed to replace specific diesel plants, for use by major export-oriented agricultural processing centers;
- o Promotion of replication of locally fabricated hydro-mechanical plants for powering decentralized rice mills and oil presses;

- o Promotion of grass roots farming systems/agroforestry concepts which not only protect and conserve the natural resource base, but relieve foreign exchange demands on fertilizer imports and generate on-farm income through increased agricultural productivity.

AID/M is aware that staffing and logistical constraints will necessarily limit our response to the opportunities identified above. However, as previously stated, AID/M also believes that to promote agricultural development in Madagascar against a background of natural resource degradation, is to invite failure. Our strategy therefore is to take an integrated approach to agricultural development through the promotion of private sector energy/natural resource initiatives which have the potential for maintaining or increasing agricultural production and environmental stability.

AID/M is proposing a judicious mix of activities including networking/information exchange, workshops, short-term training and technical assistance support, assessments and local currency support to selected projects intended to maximize our effect and outputs while minimizing our inputs. It is hoped that these activities will lay the groundwork for increased donor involvement in addressing natural resource issues.

To implement this strategy, the key activities described below will draw upon AID/W and regional funds and technical staff, thus requiring minimal field support by AID/M.

#### 4.2 Proposed activities

##### 4.2.1 Information Exchange/Networking

AID/M, with REDSO assistance, proposes to continue to draw upon AID/W data bases for up-to-date information on research and technologies in the energy, forestry, natural resources and environmental sub-sectors, with particular emphasis on integrated systems such as agroforestry and farming systems research and development.

With REDSO assistance, GDRM will be also unofficially linked to the S&T funded ICRAF implemented "Agroforestry. Networking in Africa" Project. Although this project will only initially work in the East African highlands, much of the species and technology research to be conducted will be of direct benefit to Madagascar. AID/M will also request that FAO provide a complete set of forestry, watershed management and related documents to FOFIFA and MPAEF.

6070B

In order for GDRM to be able to bring this information down to the level of program planning, policy change and project implementation, AID/M is also proposing to finance a study trip for senior MPARA and MPAEF officials to East and Central Africa and the Sahel. The purpose of this study trip would be to see project and program successes and failures in the forestry/natural resource sub-sector in selected countries as well as the relative success of using PVOs to implement tree planting/soil conservation projects. The objective of the trip would be to prevent these officials from making the same program and project mistakes that these countries experienced ten years ago.

If possible, recommendations from the EUCEN Assessment of the analytical capability of institutions in the E/NR sector will be incorporated to the extent possible in any follow-on project to MARS I.

#### 4.2.2 Short Term Training

AID/M hopes to continue to take advantage of selected short term training opportunities, relevant to our integrated strategy, offered by AID Central and Regional Bureaus as well as by international agriculture research centers, particularly ICRAF, CIMMYT, IRRI and IITA. Courses of particular relevance to our strategy would be those dealing in farming systems research and development, agroforestry research and development (including multi-purpose species research, alley cropping, etc.), private forest administration, ag extension, land and tree tenure, etc.

IITA will be holding an "Alley Cropping" workshop in the near future and AID/M intends to sponsor two participants.

#### 4.2.3 Short Term Technical Assistance/Assessments

AID/M hopes to continue the use of short-term consultancies in support of other donor activities in those instances where PVO, World Bank or GDRM programs are significantly advanced and mesh with our strategy. Particular attention will be paid to requests where substantial amounts of counterpart funds are expected to be allocated.

At the request of the World Bank, AID/M proposes to explore the possibility of channeling AID/W Technical Assistance through this office for the design of three Bank funded projects in Madagascar; Agricultural Institutions II, Forestry III, and Energy I Projects. These projects are to a degree substantively interconnected, especially in the area of sustainable agriculture, agroforestry, soil conservation, and improvement of the resource base. Such assistance would enable AID/M to maintain a certain level of leadership in the sectors

resulting from the REDSO executed E/NR Pre-assessment which was well received by both the Bank and GDRM and kindled this collaborative activity with the Bank.

This approach would also represent the least burdensome option for AID/M's continued involvement in these sectors vital to long term development in Madagascar. Given the inter-related assistance that may be required, AID/M would expect possible roles for the Energy Initiatives for Africa Project, the Forestry Support Program and various relevant activities of ST/EY.

However, any such assistance should conform to the following:

- o That it emphasize topics and activities identified in the CDSS, or in the Energy/Natural Resource Pre-assessment prepared by REDSO; and
- o That such consultants be an integral component of donor/GDRM teams, which shall be responsible for all logistical arrangements.

Given the above criteria, those activities are worthy of Technical Assistance support include:

#### 4.2.3.1 Carbonisation of Pine Smallwood Feasibility Study:

GDRM has established and manages through its parastatal, fanalamanga, an 80,000 ha pine plantation at Haut Mangoro. Routine thinning on the plantation has been delayed and there are substantial areas of the plantation where poor growth has resulted in less than commercial timber quality stands. A program of thinning and clearfelling is now starting which will result in as much as 700,000 cubic meters per year of pine smallwood with no commercial value other than for charcoal production. At the same time the demand for firewood and charcoal in Antananarivo has led to widespread deforestation and serious soil erosion, increasing siltation in irrigation systems and waterways, and reducing soil fertility and carrying capacity in key agricultural ecosystems.

The World Bank, under its Energy I Project, is proposing a feasibility study in order to determine/demonstrate the economic viability and practicality of utilizing pinewood charcoal for household and industrial uses. If feasible, the resulting reduction in regional deforestation, and the related long term economic benefits to agriculture could be very considerable. The objectives of the study are therefore to:

6070B

- o Design a private sector oriented program and project to carbonise, transport and market substantial volumes of pine smallwood using as a production technology an appropriate combination of low cost centralized, fixed and dispersed mobile kilns;
- o Construct, demonstrate and compare several options for private sector, small scale, dispersed carbonisation technologies which may form a part of a least cost approach to pine smallwood carbonisation in the local context.

AID/M is proposing to use a combination of PD&S, follow-on MARS, ST/EY and ST/FENR funds to provide the team leader and forest economist for this study.

#### 4.2.3.2 Natural Resources Inventory

AID/M plans to consider the financing of a portion of the local currency costs of the World Bank's proposed Natural Resources Inventory (Ag Institutions II). Currently this inventory takes into account only soils and water points, but using local currency inputs as leverage, we will ask that vegetation and erosion potential be also taken into consideration in order to better reflect GDRM and AID/M concerns.

AID/M proposes to discuss with the World Bank ways to revise the present work plan and proposed budget, so as to reduce the role of expatriate consultants, and to expand the effort to be undertaken by the Malagasy themselves.

AID/M also proposes to call upon the services of the Regional Remote Sensing Facility in Nairobi to represent our interests in assisting the Bank in developing the Terms of Reference for the inventory and in providing guidelines and support for eventual training of GDRM personnel involved in the inventory effort.

#### 4.2.3.3 Agro-processing/Ampefy

The Hydropower for Agro-processing Project is premised on an analysis of the agricultural system in the country in general, and Ampefy in particular. Project conceptualization and design were based on the assumptions that:

- o The change in macro-economic policies have led to a demand for decentralized mills, so that farmers can capture more of the value-added, and can lower transport costs;

- o The existing large mills cannot meet the increased demand, and their transport fleet cannot service the farmers needs;
- o Rice production and marketing in Madagascar is regionally and seasonally unequal; the availability of decentralized mills would promote increased production in the surplus regions;
- o Existing decentralized mills are often inoperable or underutilized due to the lack of spare parts, and the cost and availability of diesel fuel or electricity;
- o The lack of localized processing equipment is also constraining the production of other commodities, most notably oil crops (groundnuts, and soy) tomatoes, and maize; and
- o The unavailability of power systems is as significant a constraint to the expansion of rural mills as the unavailability of the milling equipment itself.

In order to evaluate and verify these assumptions, AID/M is proposing that an assessment be undertaken using project resources and Malagasy agricultural specialists and backstopped by REDSO. A tentative SOW for this assessment as follows is to:

- o Develop and test a viable survey questionnaire for wider application;
- o Gather detailed information on milling in Ampefy, the Antananarivo Province, and additional national information, if possible;
- o Emphasize the micro-economics and financial calculations of the millers as well as the individual farmers in the region; and
- o Establish baseline data to be used in evaluating the success of the Subproject.

#### 4.2.3.4 National Assessment of Agro-processing and the Role of Parastatals

In conjunction with the above assessment, AID/M is proposing that a broader assessment be undertaken of agro-processing, marketing and related transport throughout the country. The assessment will evaluate the evolution of these components during the period of nationalization, evaluate the impact nationalization had on the infrastructure related to

each component, and present a portrait of the status of each at this time. A tentative SOW for this proposed assessment as follows is to:

- o Evaluate the constraints on increased production arising from the changing of policies and the reduced role of parastatals;
- o Outline and evaluate the evolution and present status of all relevant parastatals dealing with priority crops (rice, maize, groundnuts, soybeans, tomatoes, tobacco); study any substitute organizations, groups or institutions that have attempted to satisfy needs unmet by existing or previous parastatals; and
- o Evaluate the potential for improved, locally manufactured processing equipment.

#### 4.2.3.5 Internal Assessments

In order to expand our knowledge base in the agricultural sector, AID/M proposes to use local currency and local consultants to explore several issues resulting from the Natural Resources Conference discussions, such as:

- o The potential use of local currency funds through Micro Realisation to carry out farm forestry/conservation projects in Madagascar;
- o An analysis of the educational system in Madagascar, with attention to the training and support of extension and technical staff in the forestry, natural resource and agricultural areas; and
- o Other assessment activities which might include studies on one or two of the hydro-electric sites identified under the earlier NRECA prefeasibility assessment, and/or the artisan component of the proposed multi-donor/MIEM charcoal stove program.

#### 4.2.4 Workshops

AID/M believes that the workshop format can be a fast, effective way of presenting new ideas and concepts to GDRM personnel. As such, AID/M, with REDSO/ESA assistance proposes to sponsor the following two strategy-related workshops.

##### 4.2.4.1 "Agroforestry Awareness" Workshop

To be conducted with ICRAF and REDSO/ESA assistance, the objective of the workshop would be to demonstrate agroforestry

as a viable land use option in the face of Madagascar's severe environmental degradation and declining agricultural productivity. The workshop would focus on mid-to-senior level technicians and project managers from MPARA, MPAEF, MRSTD and FOFIFA and regional representatives. The workshop would be undertaken in three phases. The first phase would consist of a reconnaissance visit by ICRAF consultants; the second phase would be preparation of workshop training materials by ICRAF and GDRM and the third phase would be actual workshop implementation. Workshop coordination would be undertaken by an interministerial committee. General terms of reference for the ICRAF consultancy would include (in collaboration with the Coordinating Committee):

- o Conducting site visits of all major land use systems in Madagascar, identifying potentials and problems for possible agroforestry inputs into those systems and identify research needs;
- o Meeting with MPARA, MPAEF, MRSTD, FOFIFA, University and other GDRM personnel as appropriate to ascertain and describe the level of awareness and interest in agroforestry as a land use system for Madagascar;
- o To the extent possible, describing, analyzing and documenting existing farming systems practices in Madagascar;
- o Identifying problems and opportunities for agroforestry interventions in these farming systems, including training needs;
- o Preparing a workshop implementation plan including a list of recommended participants, estimated budget (local currency costs), schedule of activities, timeframe, and training materials requirements and responsibilities; and
- o Preparing a detailed implementation plan for the second and final phases.

#### 4.2.4.2 "Strengthening Forestry Research In Madagascar" Workshop

Research has played and continues to play a critical role in the development of energy and natural resources in Madagascar, albeit more in the traditional/commercial sector than in non-traditional areas. Both the personnel and the infrastructure are present to conduct both basic and applied research although the former is somewhat out of date while the latter has certainly seen better times but is still operational. Research problems identified during the E/NR

pre-assessment are very similar to those in other developing countries. In particular:

- o Inadequate mechanisms on the part of GDRM for formulating national research priorities and for coordinating research and development programs;
- o Conflicts between national, donor and user needs;
- o Lack of proper identification of and contact with user groups;
- o Problems created by personal interest and politically motivated research priorities; and
- o Lack of information on and difficulties in accepting realities in rural areas.

To be conducted with REDSO and ST/FENR Forestry Support Program assistance, AID/M is proposing a workshop which will address these issues while facilitating GDRM determination of a prioritized forestry/natural resource research plan for presentation to donors and for better allocation of GDRM resources.

#### 4.2.5 Use of Local Currency

AID/M is of the belief that only people can protect the environment, and generate rural income in a self-sustaining manner, and not governments or donors. As such, AID/M believes that what is clearly needed in Madagascar is support of a series of pilot initiatives, especially those which seek to promote the use of self interest and farmer incentives in the protection and management of the resource base.

While we are not proposing any bilateral project activities of this nature in the near future, we nevertheless intend to use local currency in order to support projects that promote these concepts.

Madagascar is unique to the region in its ability to use counterpart funds efficiently and cost-effectively. This is due to two factors: highly qualified staff in segments of the GDRM, and the private sector; experienced NGOs involved with water supply projects; and a local village political structure which can harness local labor.

The potential for significant activity by NGOs, individuals, and communities in support of the energy/natural resource strategy outlined in this memorandum is clearly proven; what is now needed is an approach which provides for

the more systematic review and selection of activities for further support. In particular, it is recommended that a REDSO review group be organized to assist the AID representative in assessing whether proposed activities support the strategies outlined in this document.

While we will consider all requests from the GDRM for counterpart funds in support of World Bank activities in these sectors, we are concerned about the capabilities of some of the institutions involved in the sectors, and will prefer a project-specific or activity-specific approach rather than the provision of program funds.

Activities selected for local currency support will be selected according to the above criteria as well as the following:

- o If possible, the use of local currency should be handled and monitored by another organization (donor, NGO, GDRM agency). Except for technical inputs from REDSO, if desired, the activity should require a minimum or no management effort on the part of AID/M;
- o The local currency should complement and not supplant other funding sources, in particular locally generated resources;
- o The activity should promote and lead to a self-sustaining effort, utilizing the private sector, and if practicable local communities, as the ultimate change agent/beneficiary; and
- o Besides supporting the energy/natural resource objectives of AID/M, as outlined in this Appendix, the activity should promote other CDSS objectives, in particular support and improvement in agricultural productivity, and the saving or earning of foreign exchange.

Likely activities to be supported through local currency subventions would include:

#### 4.2.5.1 Support to World Wildlife Fund/USA

AID/M and WWF/USA appear to have the same degree of interest in improving the data and information base concerning the status and trend of resources in Madagascar. AID/M is now in the process of preparing a memorandum which outlines areas for cooperation, including linkages to the RRSF in Nairobi.

The objective of AID/M and WWF collaboration would be to meld the conservation objectives and perspectives of WWF with the development/farm forestry interests of AID/M, while taking advantage of WWF's field presence in terms of implementation and monitoring. At the same time, AID/M would also be making a small, but important contribution to maintaining Madagascar's biological diversity. REDSO will be called upon to develop SOWs for development personnel to be included in WWF assessments.

AID/M has also asked WWF to prepare an informal note concerning an "umbrella" activity in the area of remote sensing/resource inventories which could be submitted for funding by the MRSTD or another Ministry. Should GDRM's response be favorable, we would intend to support a portion of WWF's local currency costs.

4.2.5.2 Support to GDRM/Swiss Project Centre de Formation Forestier Professionnel - Morondava and the Swiss Projet d'Appui au Reboisement Villageois-Firaisana

The Morondava Project carried out by the MPAEF and Swiss Development Cooperation Program has three objectives focussed on natural forest management. They are:

- o Research on natural forest silviculture, management and exploitation;
- o Application of lessons learned/known in a pilot/demonstration natural forest management system and rational utilization of a timber concession of 10,000 hectares; and,
- o Training of national personnel, both government and private sector in natural forest management and utilization.

The project, manned by five Swiss cooperants and a like number of Malagasy counterparts has been going for more than four years. The project was visited by AID technical forestry staff during the November 1985 International Conference on the Conservation of Natural Resources in Madagascar.

The project, in the judgement of AID staff, is progressing very well as evidenced by the following points identified during the field visit:

6070B

93

- o A careful, detailed compartmentalized management/extraction plan and infrastructure has been put in place and full-scale logging is underway. These extraction efforts have been carried out under rigorous guidelines with minimum impact on remaining forest;
- o Follow-up regeneration assessments, management studies and related research as well as regeneration release and replanting have been formulated which will assure the sustained productivity of the forest;
- o A full scale sawmill has been set up in Morondava and is presently supplying local and regional timber needs. Improved sawmill conversion and residue utilization have been achieved thereby making best use of extracted wood; and
- o A continuing series of training courses and on-the-job training is underway. The research program has already produced results especially on planting practices for the most productive and demanded species.

The Morondava Project with continued Swiss assistance will over the next few years have developed a viable forest management model for the dry deciduous forests of the West Coast of Madagascar.

The Firaiana Project, under a similar arrangement with the Swiss Development Cooperation and MPAEF as for Morondava, has the objectives of:

- o Encouraging every family in each fokotany to plant 15 trees per year for three years for soil conservation purposes;
- o Making the rural population aware of the causes of deforestation by analyzing water run-off, biomass deterioration, and nutrient loss due to erosion and analyzing the importance of wood in the local economy;
- o Training the rural population/participating families in nursery establishment and maintenance, site preparation and planting techniques, and plantation maintenance and follow-up;
- o Stimulating, mobilizing and encouraging the population to apply skills acquired through the project;

- o Evaluating farmer achievements as a means of providing feedback to the extension approach and defining future project activities.

This project is also progressing extremely well and is one of the few projects in Madagascar which has a people based, bottom-up approach to development.

Because of the demonstrated commitment and effectiveness of the present Swiss/GDRM teams in these two projects, AID/M believes that local currency support to these endeavors would be a wise investment. Moreover, these projects focus on an important area of concern and local currency support would constitute a minimal management burden for AID/Madagascar. AID/M therefore proposes to initiate consultations with the Swiss/GDRM officials with a view to providing local currency support to the projects. This support would likely be focussed on increasing project efforts on sensitizing local people on the potential of the forests and exploring agroforestry techniques to slow down the pace of shifting cultivation.

#### 4.2.5.3 Support to PVOs

AID/M believes that PVOs are one of the most effective mechanisms which can be used in supporting natural resource activities which promote agriculture rehabilitation and environmental stability. The only PVOs currently operating in Madagascar are FIKRIFAMA (a local NGO with Lutheran World Federation affiliation) and Catholic Relief Services. Both of these organizations have expressed interest in expanding their project portfolios into the natural resource/agroforestry sub-sector. Should they develop viable proposals in accordance with AID/M's CDSS, we would be prepared to finance a portion of local currency costs, subject to proposal review by REDSO and concurrence by GDRM

#### 4.2.5.4 Support to FOFIFA/Forestry Research

AID/W proposes to support two activities identified as priority issues during the Natural Resources Conference which will lay the foundation for future AID and other donor activity in natural resource support to agricultural rehabilitation. These are:

- o Multi-purpose species trials in collaboration with the Swiss and FOFIFA;
- o Establishment of multi-purpose tree seed production and storage facilities in collaboration with the Swiss and MPAEF.

#### 4.2.5.5 Hydro-Mechanical Power for Agro-processing

REDSO and AID/M earlier requested assistance from the Energy Initiatives for Africa Project, to assess the potential for local fabrication, installation and community operation of a hydropower facility designed to provide shaft power for rice mills and oil presses.

This pilot activity includes the local fabrication and installation of two 40 kw turbines at the village of Ampefy, as well as a series of assessments concerning the country-wide potential for the technology, and the relative importance of alternative power sources. Construction has begun on the pilot site, and the facility should be inaugurated by June, 1986.

If the pilot activity proves to be successful, AID/M expects there to be a series of requests from communities and private companies for similar sites, and assistance in procuring turbines. The development of a private sector financing facility would provide an ideal mechanism for funneling the funds necessary for this activity to the private sector; funds needed by communities and NGOs for such installations could be provided through the existing Micro-Realization and Micro-Hydraulique offices within the Office of the President and National Rural Development Bank (BTM), respectively.

In conjunction with any MARS follow-on activity undertaken on agro-processing, it may be necessary to provide a nominal amount of short-term technical assistance to support additional sites.

The Ampefy project is also a significant test of the leverage available through the use of local currency. \$150,000 from the EIA project was supported by the use of the local currency equivalent of \$900,000. These counterpart funds were allocated by the GDRM within four days of the formal request, and have so far been used judiciously and closely follow the implementation plan in the Project Paper.

The Ampefy project also demonstrates the type of activity that is possible with little expatriate technical assistance input. Carefully designed short term assistance can usefully support the competent Malagasy staff in the respective ministries, and in the private sector, a situation not found in other countries within the E/SA region.

6070B

pl

#### 4.2.5.6 Other Local Currency Activities

AID/M is also considering local currency support to a number of other activities. Depending on further information, field visits and analyses, AID/M proposes to support:

- o Use of thinnings from Fanalamanga Scheme by the private sector for charcoal, for household and/or industry consumption (under the World Bank Energy I Project);
- o Partial financing of local currency component of at least one of the NRECA-designed micro-hydropower schemes (also under Energy I); and
- o Partial funding of dissemination/marketing of improved locally made stoves (based on EIA/KENGO design, and also in cooperation with Energy I);
- o Support, through a private sector funding mechanism, and through Micro-Realisation and Micro-Hydraulique, of replication of hydro-mechanical systems, if necessary.